Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

May, 1992 Vol. 11, No. 1

NEXT MEETING:	Chaetopterids and Onuphids
GUEST SPEAKER:	Ron Velarde and Dean Pasko City of San Diego
DATE:	June 8, 1992 9:30am - 3:00pm
LOCATION:	Allan Hancock Foundation Building, Rm 30 University of So. California Los Angeles, California

JUNE 8 MEETING:

Ron and Dean wish to remind you that the June meeting will be a workshop- i.e., please bring specimens to verify that the key works with specimens of various size and locality. In particular, they need specimens and comments on species of Diopatra and Onuphis. They will need extra microscopes and would appreciate any dissection and/or compound scopes that you could bring.

SPECIAL MEETING:

A one day workshop on Asellota Isopods by Buz Wilson from National Museum in Sydney, Australia is scheduled for June 22. The meeting will be held at the Los Angeles County Museum of Natural History, Los Angeles, CA in the Times Mirror Room from 9:30am to 3:00pm.

FUNDS FOR THIS PUBLICATION PROVIDED IN PART BY THE ARCO FOUNDATION, CHEVRON USA, AND TEXACO INC.
SCAMIT newsletter is not deemed to be a valid publication for formal taxonomic purposes.

MINUTES FROM MEETING ON MAY 11, 1992:

During the morning, the group decided to first compile a master list of all species reported in our area. Dr. Mas Dojiri is compiling a species list from the 4 major discharging agencies; which will then be combined with Leslie Harris's updated list of polychaetas. This list will then be distributed for review to representatives of each agency and their respective consultants. In August, there will then be a subsequent meeting to compare lists and form subcommittees to examine the list for completeness, accuracy, synonyms, etc. The ultimate goal is to include SCAMIT provisional species in a revised Straughan and Klink (1980).

Later in the morning it was decided to make a list of SCAMIT provisional species. This list will have all provisional species that have been reported to date. Tom Parker will combine his list from the index of Volumes 1-6 with Mas's list of provisional species which will make it complete up to 1989. Dean Pasko will then help Tom bring the combined list up to date. This list will identify which species need description as a SCAMIT provisional species, and which have been described in a refereed journal. A protocol will then be established for publishing SCAMIT provisional species.

The afternoon session included a discussion on the best way to catalog SCAMIT literature. Don Cadien has already entered most of his literature into ProCite. The hope is that this file can be combined with similar files from other agencies. This list can then be compared with SCAMIT's literature collection and deletions and additions made. SCAMIT will then be able to produce a master list of literature in its collection. This list will then be available to interested agencies. If anyone wishes to coordinate this effort please contact Ron Velarde. There was also discussion about creating a librarian position to coordinate the above effort, manage the newly established library and establish a check-out procedure.

FUTURE MEETINGS:

The July 13 meeting will be on Other Phyla. John Ljubenkov will discuss problem animals and intercalibration of names between agencies. There will also be a show and tell of any new or unusual taxa recently reported by members- so bring your specimens. The meeting will be at MEC Analytical Systems 2433 Impala Dr. Carlsbad, CA.

The August meeting will again address the master species list of the Southern California benthos, the provisional species list, and the SCAMIT literature library and librarian. Committees will be established by taxa for the master species list and provisional species list projects. Each committee will be responsible for the

accuracy of the records on the master species list, and the publication efforts of the provisional species.

1991-92 TREASURY'S REPORT:

During the past fiscal year, April 1991 through March 1992, the major expense was the newsletter for printing and postage, $2534.76. It was not necessary to purchase paper or mailing envelopes due to a large supply of these items that had been purchased the prior fiscal year. The second largest expense was for three publications, $1845.78. Dues were SCAMIT's primary source of income, $1320.00. The following is a summary of the expenses and income:

Expenses	
Newsletter	$2534.76
Grants	1845.78
Barnard Memorial	83.89
Workshops	337.22
Miscellaneous	199.25
Income	
Dues	$1320.00
Interest	237.00
T-Shirts	16.00
Donations	20.00
Miscellaneous	130.00
Account balance (March 31,1992)	
Savings	$2958.64
Checking	779.92

Included in this months newsletter is the tenative agenda for the coming year.

Also included in this months newsletter is the current list of members of SCAMIT who are interested in doing taxonomic consulting and their speciality. If there are any corrections and/or additions to this list please contact:

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SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

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SCAMIT MONTHLY AGENDA 1992-93

May 11	Discussion on Provisional Species, SCAMIT Master Species List, and SCAMIT Literature Collection at Cabrillo Marine Museum, San Pedro, Ca.
June 8	Chaetopterid and Onuphid Polychaete Workshop with Ron Velarde and Dean Pasko of the City of San Diego at the Allan Hancock Foundation University of Southern California, Los Angeles, Ca.
July 13	Miscellaneous Phyla (Others) Workshop with John Ljubenkov of MEC Analytical Systems at MEC Analytical Systems, Carlsbad, Ca.
August 10	Further Discussion on Provisional Species, SCAMIT Master Species List, and SCAMIT Library at Cabrillo Marine Museum, San Pedro, Ca.
September 14	Report on the Third International Polychaete Conference by Attending Members of SCAMIT and Distribution of Invertebrate Fauna on Pinnacles in Carmel Bay, Ca. with Phillip Barrington of California Department of Fish and Game at the Allan Hancock Foundation, University of Southern California, Los Angeles, Ca.
October 19*	Diastylid Cumaceans with Tony Phillips of the Hyperion Treatment Plant at Cabrillo Marine Museum, San Pedro, Ca.
November 16-17	Amphipod Workshop with Dr. E. L. Bousfield of the Royal British Columbia Museum, Victoria, British Columbia, Canada at the Los Angeles County Museum of Natural History, Los Angeles, Ca.
December 14	Polycirrinae Terebellid Polychaetes with Leslie Harris of the Los Angeles County Museum of Natural History and Pelagic Invertebrates with Dr. Bill Hamner of the University of California Los Angeles at the Allan Hancock Foundation, University of Southern California, Los Angeles, Ca.
January 11	Anthurid Isopods with Dr. Rick Brusca of the San Diego Natural History Museum and Don Cadian of the Los Angeles County Sanitation Districts at the San Diego Natural History Museum, San Diego, Ca.

February 8	Brachiopods with Dr. Eric Hochberg and Bivalve Molluscs with Paul Scott of the Santa Barbara Museum of Natural History at the Santa Barbara Museum of Natural History, Santa Barbara, Ca.
March 8	Sabellid Polychaetes II with Dr. Kirk Fitzhugh of the Los Angeles County Museum of Natural History at the Allan Hancock Foundation, University of Southern California, Los Angeles, Ca.
April 12	Decapod Crustaceans with Dr. Jodi Martin of the Los Angeles County Museum of Natural History at the Los Angeles County Museum of Natural History, Los Angeles, Ca.

* - note that this meeting is not scheduled on the regular second Monday of the month.

EXECUTIVE SUMMARY OF SCAMIT ACTIVITIES 1991- 1992

Highlights of 1991- 1992

May	Two day bryozoan workshop with Dr. William Banta, American University, Washington, D.C. (CMM)
June	Organization of the SCAMIT literature library (CMM)
July	"A new approach for analyzing trophic composition of marine benthic communities" by Karen Green, and "Everything you wanted to know about isopods... but were afraid to ask" by Dr. Rick Brusca, San Diego Natural History Museum (SDNHM)
August	Sabellid polychaetes were reviewed by Dr. Kirk Fitzhugh, Los Angeles County Museum of Natural History (USC-AHF)
	Dr. J.L. Barnard died of a heart attack.
September	Phoronids were reviewed by Dr. Russ Zimmer, University of Southern California, and Chone (Sabellidae) were reviewed by Dr. Kirk Fitzhugh, Los Angeles County Museum of Natural History (USC-AHF)
October	Two day amphipod workshop with Dr. Jim Thomas, Newfound Harbor Marine Institute, Big Pine Key, Florida and Elizabeth Harrison-Nelson, Smithsonian Institution (LACMNH)
November	Sea Pens were reviewed by Dr. Eric Hochberg, Santa Barbara Museum of Natural History (SBMNH)
December	Karen Green reviewed sponges (CMM)
	SCAMIT Christmas Party (CMM)
January	Ron Velarde reviewed mysids (SDNHM)
February	Ophiuroid workshop with Dr. Gordon Hendler, Los Angeles County Museum of Natural History (LACMNH)
March	Leslie Harris reviewed abranchiate terebellids (USC-AHF)
April	Don Cadien represented SCAMIT at the J.L. Barnard Memorial and Symposium, Washington D.C.
	Don Cadien reviewed thalassinoid "shrimps" (CMM)

As you can see from the list of highlights, SCAMIT had another full year of activities in 1991- 1992. This year we scheduled more of the meetings with curators from the local museums to increase SCAMIT involvement with natural history museums. On behalf of the officers and members of SCAMIT, I thank all of you for making this past year a success.

In August, SCAMIT and the taxonomic community lost a friend when Dr. J.L. Barnard died of a heart attack. Each year since 1985, the highlight of the SCAMIT schedule was the amphipod workshop that Jerry conducted. His knowledge of amphipods and his willingness to help SCAMIT will be missed by everyone who knew him. Don Cadien represented SCAMIT at the J.L. Barnard Memorial and presented a poster at the symposium on amphipods.

One of the major goals of SCAMIT is to get the provisional species formally described in the scientific literature. Attached is the list of SCAMIT contributions. As you can see, we had five publications in 1991- 1992 and three of these were supported by grants from SCAMIT. This is only the start; we need to get even more species described and SCAMIT will be working on this in the upcoming year.

Ronald D. Velarde

President

SOUTHERN CALIFORNIA ASSOCIATION OF MARINE INVERTEBRATE TAXONOMISTS

LIST OF CONTRIBUTIONS

1. Roney, James D. 1990. A new species of marine amphipod (Gammaridea: Ampeliscidae) from the sublittoral of southern California. Bulletin of the Southern California Academy of Sciences, 89 (3): 124-129. (SCAMIT 89-1).

2. Green, Karen D. 1991. Maldane californiensis, a new species (Polychaeta: Maldanidae) and a review of its relations. Bulletin of Marine Science, 48 (2): 214-226. (SCAMIT 90-2).

3. Dojiri, Masahiro, Donald B. Cadien and Charles A. Phillips. 1991. A new species of Ammothella (Pycnogonida: Ammotheidae) from deep water off San Nicolas Island, California. Bijdragen tot de Dierkunde, 61 (1): 31-41.

4. Dojiri, Masahiro and Robert A. Brantley. 1991. Lepeophtheirus spatha, a new species of copepod (Siphonostomatoida: Caligidae) parasitic on the California halibut from Santa Monica Bay, California. Proceedings of the Biological Society of Washington, 104 (4): 727-735. (SCAMIT 91-1).

5. Lovell, Lawrence L. and Ronald G. Velarde. 1991. Regional standardization of taxonomy. In Biological Criteria: Research and Regulation, Proceedings of a Symposium, Office of Water, U.S. Environmental Protection Agency, EPA-440/5-91-005, pp. 155-157.

6. Sieg, Jurgen and Masahiro Dojiri. 1991. Two new species and a new genus of the suborder Tanaidomorpha (Crustacea: Tanaidacea) from California waters. Journal of Natural History, 25: 1493-1512. (SCAMIT 91-3).

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Southern California Association of Marine Invertebrate Taxonomists

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June, 1992 Vol. 11, No. 2

NEXT MEETING:	Miscellaneous Phyla
GUEST SPEAKER:	John Ljubenkov MEC Analytical Systems
DATE:	July 13, 1992 9:30am - 3:00pm
LOCATION:	MEC Analytical Systems 2433 Impala Dr. Carlsbad, California ***map is included**

JULY 13 MEETING: Remember to bring any rare and unusual specimens with you to the meeting. There will also be a discussion on the intercalibration of Miscellaneous Phyla name usage among agencies.

MINUTES FROM MEETING ON JUNE 8:

Tom Parker of LA County Sanitation District mentioned that he has noticed a particular smell (lemon and/or old sneaker) from a Pista disjuncta collected in a trawl. If anyone has any additional reports of this smell in the field please contact Tom, additional information is included in this newsletter.

Chaetopterid and Onuphid Workshop: Dean Pasko and Ron Velarde reviewed commonly encountered Chaetopteridae and Onuphidae of southern California. Summary notes and keys have been included in this newsletter.

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SCAMIT newsletter is not deemed to be a valid publication for formal taxonomic purposes.

During the first half of the workshop SCAMIT decided that the species of Mesochaetopterus found at shelf depth in soft bottoms off Southern California may represent a new species. Specimens of Mesochaetopterus sp. that are in good condition may be sent to Dean Pasko at City of San Diego, Marine Biology Lab MS-45A, 4077 N. Harbor Dr., San Diego, CA. 92101. Additionally, Spiochaetopterus costarum found in Southern California does not match the original species description of Claparede (1870). Dean Pasko is reviewing the literature and original description to determine the status of the So. California material.

The second half of the workshop covered the Onuphidae. Two variations of color pattern on Mooreonuphis nebulosa have been recorded. One has the typical pair of dark pigment spots on the dorsum of the anterior and median segments; the other has various gradations of transverse banding that results from the possible merging of the dorsal pigment spots. These two variations probably do not represent separate species, but the problem requires further study.

Ron Velarde has been trying to resolve the Rhamphobrachium cristobalensis vs. R. longisetosum issue (the validity of R. cristobalensis as a separate species). Data collected so far by Ron supports Paxton's (1986b) remarks, that R. cristobalensis represents a juvenile form of R. longisetosum. If anyone has any specimens in good condition please send them to Ron at City of San Diego, Marine Biology Lab MS-45A, 4077 N. Harbor Drive, San Diego, CA 92101.

Many inconsistencies were found with the members of the genus Onuphis; so when identifying specimens caution should be taken. This genus is particularly problematic due to developmental changes. See Dean's accompanying notes for further details.

FUTURE MEETINGS:

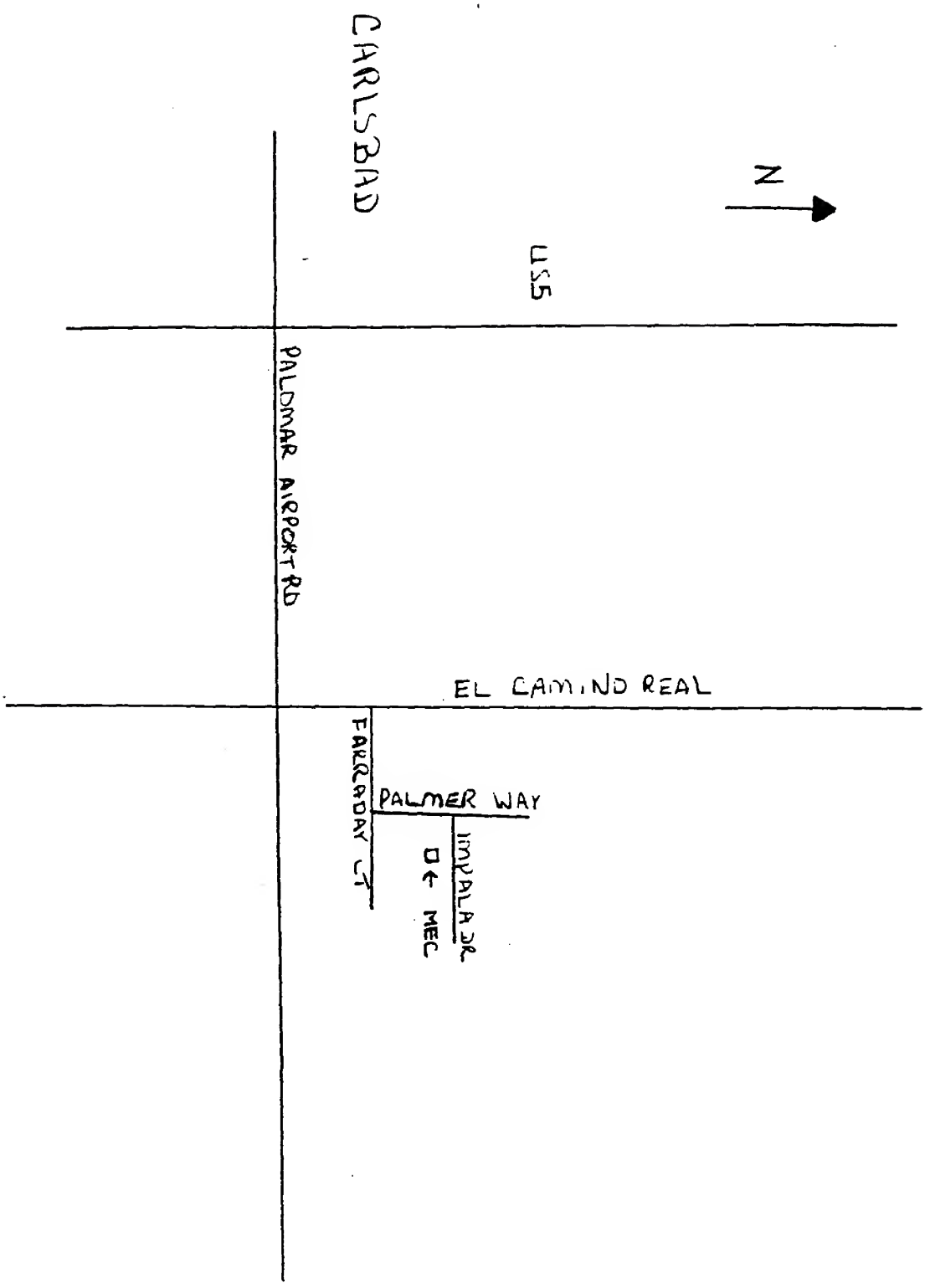
The meeting on August 10, 1992 will be a continuation of the May meeting on the master species list of the southern California benthos, the provisional species list, and the SCAMIT library. It will be held at the Cabrillo Marine Museum, San Pedro, California.

The September 14 meeting will have a report on the Third International Polychaete Conference by attending members of SCAMIT, Phillip Barrington of California Department of Fish and Game will give a talk on the Distribution of Invertebrate Fauna on Pinnacles in Carmel Bay, California and Drs. Mas Dojiri and Kirk Fitzhugh will lead a workshop on the preparation of taxonomic publications. This will be held at the Allan Hancock Foundation, University of Southern California, Los Angeles, California

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4900
Treasurer	Ann Dalkey	(310)648-5317



MAP TO MARINE ECOLOGICAL CONSULTANTS (MEC)

Gulf Coast Research Laboratory

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March 31, 1992

Dear Colleague,

The response to the first issue of the CUMACEAN NEWSLETTER has been excellent; we received information, bibliographic references, and reprints from 32 colleagues representing 14 countries. We greatly appreciate your replies and helpful suggestions. Information about the Cumacean Newsletter was included in the March issue of "The Bedyssiast" (Vol.11, No.1) and the December issue of the "Isopod Newsletter" (No.17). We are grateful to the editors of these publications for making this information available to carcinologists interested in Cumacea who were not included in the first mailing list of the Newsletter.

One of our colleagues has suggested that it would be helpful if we could include the mailing address of the first author for all the publications cited in the Newsletter. In response, we have included (when available) the address of those authors that are not directly involved in cumacean research, but whose publications mention or contain some data on this group. This address directly follows the citation and the remaining addresses may be obtained from the directory.

Again we wish to thank those who responded to our first request for information on current research interests and we look forward to hearing from those colleagues working on cumaceans who have not yet had an opportunity to write. As stated in first Newsletter, information on Cumacea dealing with (1) taxonomic and ecological studies, (2) new publications, manuscripts in press, and theses [including title and summary], (3) collections available for study and exchange of specimens, (4) current research interests and programs, and (5) changes in address, is requested. An information form is enclosed for this purpose.

If some colleagues are in position to make a small donation to help us with the publication and mailing costs of the Newsletter, we would be most grateful. Checks or money orders for donations should be made out to "Gulf Coast Research Laboratory" and mailed to Richard Heard.

Hoping to hear from you.

Richard W. Heard
Gabriele H. Meyer
Daniel Roccatagliata

Invertebrate Zoology Section
Telephone (601) 374-5552
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June 15, 1992

Worms stink! Recently a number of large terebellid specimens have been collected from various benthic locations near the Palos Verdes Peninsula that have a distinct and unusual odor. I have been unable to find any notice or personal comment about the odor of local live terebellid worms. There was a recent publication in the Third International Polychaete Conference on the production of various bromophenol compounds in *Lanice* and other terebellid species. The odor of these compounds was not qualitatively described, but bromophenols, indoles, etc are known generally to be odiferous. The literature contains several references to other odiferous compounds in other groups as well.

These specimens can potentially be listed as either *Pista disjuncta* or *P. fasciata* depending upon how much interpretative effort is placed the structure of the posterior thoracic uncinal shafts. When the uncini are dissected and placed on a slide, the hooks appear to be tightly packed and lack any stem if viewed from the exterior of the body wall. If however, the same preparation is teased apart to separate the individual uncini, or the preparation is turned over so it is viewed from the inside of the body wall, then large and obvious stems are seen. These stems are nearly 1/5 the width of the uncinal crown and 1-3 times longer. These are not easily interpreted as "delicate ligaments".

The main differences relied upon to separate these two species is the presence or absence of long handles on the uncini in double rows on setigers (#8-17). However the description of P. disjuncta by Moore, 1923 contains the words " ..stout stem replaced by a delicate ligament".
The accompanying illustration adds to the confusion by depicting a simple line drawing of an uncini with a long, obvious stem or shaft. SCAMIT voucher sheets also rely heavily on this written description to define *P . disjuncta* and are subject to interpretative variation when compared to the written and illustrated descriptions by other authors.

Ventral scutes are also found on thoracic segments #3 -15 . These scutes are illustrated in general by various authors. On previously preserved material the scutes have a pigmented band at the posterior half which is

slightly kidney shaped. Successive ventral segments possess deep pockets or invaginations segmentally separating each scute. On this more freshly preserved *Pista* material, known to possess this unusual odor, these scute structures are notably different. The kidney shaped portion at the posterior third of the scute is actually slightly raised, ruddier in shade than surrounding tissue, and seems to possess invaginations on the surface. These do not appear as mere epidermal wrinkles, but rather well organized invaginations on the surface of an area that looks "glandular" in nature.

Hutchins and Glasby (1989) describe *P. sinusa*, et al as possessing "well chitinized " uncinal shafts. The differences in uncini shaft structure recognized by local workers may have an explanation unrelated to taxonomy. The shaft or stem structure of the hooks may in fact be a sequential hardening of the chitinization mentioned by Hutchings and Glasby. Chitinization in other invertebrate groups has been investigated. It is well known that chitin is cured through the production of various organic compounds. This process requires the mixing of several precursor compounds to later be converted by polyphenol oxidase into the compound quinone which then actually "tans" or links polypeptide chains. This causes the protein to become harder, darker, and tougher. Though phenolic tanning is not universal for chitin, it has been used by various taxa, and might be one use of phenolic compounds in Terebellids. In these smelly terebellids the uncinal fascicle and the patch-shaped portion of each ventral scute is close together. If such compounds were carried or held to the setae by the mucous also secreted by these segments, a worm could reliably treat each fascicle with the compounds necessary to harden any non-cross linked uncinal ligament. Quite possibly the answer to such speculations can only be found once we all put our "noses to the grindstone".

For such an effort, please make some personal note of when you encounter live Pista/terebellids that produce a recognizable odor. Please forward these personal encounters to me at: T. Parker, Marine Biology Laboratory, 24501 S. Figueroa St. Carson CA 90745.

NOTES FROM SCAMIT WORKSHOP, 6/8/92, ON THE CHAETOPTERIDAE AND ONUPHIDAE COMMON ALONG THE SOUTHERN CALIFORNIA SHELF

by Dean Pasko & Ron Velarde

6/11/92

The keys presented in this workshop were first developed to train new taxonomists in the City of San Diego's Ocean Monitoring Program. The keys were designed for the identification of specimens from shelf depths off Point Loma, San Diego, CA, and are valid for soft-bottom benthos from 45 m to approximately 120 m. They were intended to facilitate the enumeration of large numbers of specimens, and, whenever possible, use characters visible through dissection microscopes, such as color pattern or the presence/absence of eyes. Systematic affinities were retained whenever possible, but were sometimes compromised for the sake of efficiency.

The purpose of the workshop was to increase the breadth of the keys so that they become useful to the general SCAMIT membership working in the southern California Bight.

THE CHAETOPTERIDAE

Problems Associated with Chaetopterid Taxonomy

To our knowledge, the Chaetopteridae have not been covered in previous SCAMIT meetings.

Kudenov (1975) recognized that the tubicolous habits of chaetopterids frequently causes poor preservation, making identification that relies primarily on soft body parts difficult. Hartman (1969), Hobson and Banse (1981), and Uebelacher and Johnson (1984), for example, use the shape of the notopodia in the mid-body region, the presence/absence of the small tentacles at the base of the palps, and the length of the palps to distinguish genera. They also use the shape and texture of the tubes for identification. We have found these characters unsatisfactory for identifying many of our chaetopterid specimens.

At Point Loma, we do not always have adequate preservation of animals within their tubes, nor do we ever get entire tubes - not only do the processes of sampling and screening destroy tubes, but in the process of sorting, many specimens are removed from their tubes or the tube is broken down to a smaller size that fits the animal. The attached key uses several characters, such as the presence or absence of a color pattern on the ventrum, the specific color pattern, the presence/absence of eyes, and the number of major spines on setiger 4, to distinguish the common species.

Variations in Color Patterns

Of the characters listed above, ventral color pattern may cause the greatest confusion. The color patterns that we describe differ somewhat from those listed in Hartman's Atlas. For example, Hartman (1969) states that the brown coloration of

Phyllochaetopterus limicolus occurs on setigers 3-5, whereas we describe the brown coloration on setigers 5 and 6. The setigers of several species are indistinct ventrally, and the setiger on which a pigment patch begins may be difficult to discern, consequently, the beginning or the end of a patch of color may not always appear as described. We tried to be consistent in describing each color patch from the setiger upon which its most anterior edge first appears when examining the ventrum of the specimen.

Phyllochaetopterus prolifica Potts, 1914

The specimens of *Phyllochaetopterus prolifica* common off southern California have the characteristics of the species as described in Potts (1914); however, they occur as single individuals whereas previous reports describe large mats of individuals from shallow water. Further work may show other structural or functional differences between the two.

Spiochaetopterus sp. A

Hartman (1969) describes *Spiochaetopterus costarum* as having a brown anterior ventrum, from the peristomium to setiger 6, with a white patch present on setigers 7 and 8, and a thickened peristomium that surrounds the prostomium. The specimens we examined had a dark brown band on setigers 6 and 7 and a white patch on setigers 7-11. Additionally, the peristomium has large "flaps" that project anteriorly over the prostomium which are not pictured in Hartman's illustrations (p. 219, Fig. 2). Initial review of Claperede's original description suggested differences between our specimens and his description. A SCAMIT voucher sheet will be presented in the next newsletter documenting the differences and designating the southern California species as *Spiochaetopterus* sp. A.

Mesochaetopterus sp. A

Our specimens of *Mesochaetopterus* appear to be intermediate between *M. taylori* and *M. rickettsii* but they are poorly preserved and incomplete. Our specimens have six mid-body segments, whereas *M. taylori* has three and *M. rickettsii* is reported to have more than 10, and as many as 21. Additionally, Hartman (1969) reports *M. taylori* and *M. rickettsii* from intertidal sands, and low intertidal and estuarine muds, respectively, while our specimens have been collected from silty sediments at approximately 60 m. A SCAMIT voucher sheet will be presented in an upcoming newsletter - depending on the availability of additional specimens - documenting the distinguishing characters of what will be designated *Mesochaetopterus* sp. A.

Chaetopterus cf. variopedatus

Chaetopterus variopedatus (Renier, 1804) has been regarded as a monotypic, cosmopolitan species. Mary Peterson is presently working on a revision of the genus, apparently having documented several differences between north American specimens and the type material. Until the revision of the genus is published, *C. variopedatus* from southern California shelf depths should be refereed to as *C. cf. variopedatus* .

Species list

The following species have been included in the key:

Chaetopterus cf. variopedatus (Renier, 1804)
Spiochaetopterus sp. A SCAMIT
Mesochaetopterus sp. A SCAMIT
Phyllochaetopterus prolifica Potts, 1914
Phyllochaetopterus limicolus Hartman, 1960

References

Hartman, O. 1969. Atlas of Sedentariate Polychaetous Annelids from California. Allan Hancock Foundation, University of Southern California, 812 pp.

Hobson, K. D. and K. Banse. 1981. Sedentariate and archiannelid polychaetes of British Columbia and Washington. Canadian Bulletin of Fisheries and Aquatic Sciences 209: 144 pp.

Kudenov, J. D. 1975. Sedentary polychaetes from the Gulf of California, Mexico. Journal of Natural History 9: 205-231.

Potts, F. A. 1914. Polychaeta from the northeast Pacific. The Chaetopteridae. With an account of the phenomenon of asexual reproduction in *Phyllochaetopterus* and the description of two new species of Chaetopteridae from the Atlantic. Proceedings of the Zoological Society of London: 955-994.

Uebelacher, J. M., and P. G. Johnson (Editors). 1984. Taxonomic Guide to the Polychaetes of the Northern Gulf of Mexico. Final Report to the Minerals Management Service, contract 14-12-001-29-91. Barry A. Vittor & Associates, Inc. Mobile, Alabama. Vol II: Ch. 11.

THE ONUPHIDAE

History of SCAMIT coverage and other relevant works

The onuphids have been covered in several prior meetings of the Proceedings of the Taxonomic Standardization Program (PTSP) of SCCWRP and SCAMIT. In 1978, Vol. 6 (1) of the PTSP newsletter, John Shisko of Hyperion and Fred Piltz of Allan Hancock Foundation compiled a list of characters for many species of the genera Onuphis and Nothria. Many of these species have subsequently been transferred to other genera. Voucher sheets for several species have appeared in the SCAMIT newsletter: *Mooreonuphis nebulosa* (as *Onuphis*) and *Onuphis iridescens* [Vol. 1 (3)]; and *Hyalinoecia juvenalis* [Vol. 1 (12)]. Sue Williams contributed a tabular key to the species of Diopatra in 1983 [Vol. 3 (12)]. A meeting was also held in August, 1983 (newsletter reference unavailable) in which a list of southern California species was presented along with a description of several taxonomically important characters. Most recently, a short note was printed in Vol. 10 (9). This note recounts a correspondence between Tom Parker of L.A. County Sanitation District and Dr. H. Paxton of Macquarie University, Australia, in which a previously undocumented condition, a bulbous tip on the aciculae of pre-branchial parapodia, is described in specimens of *Rhamphobrachium*.

The family was most recently reviewed by H. Paxton (1986a) and Fauchald (1982). These authors erected several new genera, created new specific combinations, and discussed the phylogenetic and cladistic relationships, and zoogeographic distributions of the family. The *Rhamphobrachium* complex was reviewed separately (Paxton, 1986b), and a review of the genus *Diopatra* is pending (in press?).

Some taxonomic problems

Many characters have been used to identify onuphids. Problems arise in identification because several of the most frequently used characters can be ontogenetically influenced: e.g., dentition (bi- or tridentate) of the pseudocompound hooded hooks; setiger on which the subacicular hooks begin; and, the setiger on which the branchiae begin. Color has been cited as a useful character by various taxonomists; however, this feature changes with development and may require analysis of a large number of specimens to understand the variability inherent in color patterns. We were not able to reach a consensus about which specific characters are valid for distinguishing members of some genera, for example, *Onuphis*.

At Point Loma, we have become aware of several taxonomic problems, some of which have not yet been addressed by SCAMIT.

Mooreonuphis nebulosa

The SCAMIT voucher sheet for this species [Vol. 1, (3)] states the variability of the branchiae and color patterns of this species. The branchiae may begin on setigers 6-8, and the color varies from a pair of dark pigment spots dorsally on the anterior

segments, to various gradations of transverse banding that result from merging of these pigment spots. Ron Velarde has noticed other differences as well, but these have yet to be documented. Both morphs of *Mooreonuphis nebulosa* may occur in the same sample, and as of yet cannot be distinguished as separate species. Please be aware of the two forms and note differences between them. Documented differences between the two forms may be sent to Dean Pasko of the Point Loma Monitoring Program, San Diego, CA: specimens are not necessary.

The genus *Onuphis*

Hobson (1971) and Banse and Hobson (1974) noted that members of the genus *Onuphis* may be particularly problematic, mostly due to developmental changes. In juveniles, the branchiae may not begin until the second or third setiger, though they appear on setiger 1 in adults. The dentition of the pseudocompound hooded hooks and the placement of the subacicular hooks also vary. Examination of material from the Allan Hancock collection, particularly material deposited and/or examined by various authorities, revealed inconsistencies in taxonomic characters used to determine specific designations. Variations in all of the characters listed above were common, even in adult forms, as documented by Hobson (1971). The genus may require revision, and several species would require life history studies to document developmental changes of the "taxonomically important" characters. Consequently, SCAMIT recommends that you exercise extreme caution when speciating members of this genus: Speciate only those specimens that can be designated with 100% confidence.

SCAMIT decided to designate of *O.* "intermediates" of Hobson, 1971 as *Onuphis* sp. A SCAMIT. This species can be distinguished by first the appearance of the subacicular hooks, which consistently begin on setiger 9, and by a dorsal color pattern (as described in the accompanying key). Confusion may arise between *Onuphis* sp. A and some specimens of *O. iridescens* , however. The latter has subacicular hooks that vary in their first appearance, generally occurring at setiger 12 or thereafter in adults, but occasionally on setiger 10 in smaller specimens, and setiger 9 in juveniles (see Hobson 1971). Moreover the color patterns in onuphids are somewhat variable.

The genus *Diopatra*

Species of *Diopatra* are frequently difficult to identify with confidence. The most reliable character for distinguishing *D. ornata* and *D. tridentata* remains the shape and texture of their tubes: *D. ornata* has a chitinized tube covered with shell and other debris; *D. tridentata* has a smooth, annulated, silty tube. However, problems may occur with small individuals as no one has yet documented ontogenetic changes in the construction of the tube. *Diopatra splendidissima* appears to be restricted to shallow water (to 20 m). Additionally, *D. splendidissima* can be distinguished by its coarsely serrated pectinate setae, where as *D. ornata* and *D. tridentata* have finely serrate pectinate setae.

The characters identified by Sue Williams [Vol. 3 (12)] are unreliable in that several of the features are size dependent. The presence/absence of tridentate hooded hooks has long been recognized as being inconsistent, even among adults. The shape and length of the peristomial cirri also vary, as does the presence/absence of a fifth ventral cirrus on the parapodia. Some taxonomists use the dentition of the pectinate setae and the color pattern of adults to distinguish *Diopatra* species. The usefulness of these characters was not discussed, however, because the meeting ended before these characters could be discussed. The value and consistency of these traits still need to be addressed and may follow as a half-day session in a subsequent meeting.

Rhamphobrachium cristobalensis vs. *R. longisetosum*?

Rhamphobrachium cristobalensis is distinguished from *R. longisetosum* by having fewer setigers with prolonged parapodia (2 vs. 3), fewer setigers with cirriform ventral cirri (2 vs. 3) and an earlier appearance of the branchiae (setiger 4 vs. setiger 8). All of these characters appear to be developmentally influenced, as Paxton (1986a) found for *R. ehlersi*. Paxton (1986b) remarks that "*Rhamphobrachium (S.) cristobalensis* is known only from two syntypes, both of which are juveniles. The specimens were collected within the geographic and depth distribution of *R. (S.) longisetosum* and may represent juveniles of that species." Preliminary observations of material from Point Loma by Ron Velarde, show that *Rhamphobrachium cristobalensis* is the juvenile form of *R. longisetosum*. Documentation of the developmental changes will be presented in a future SCAMIT newsletter.

Species list

The following species have been included in the key:

Hyalinoecia juvenalis Moore, 1911
Nothria occidentalis Fauchald, 1968
Rhamphobrachium longisetosum Berkeley and Berkeley, 1938
Diopatra spp.
Paradiopatra parva (Moore, 1911) (= *Sarsonuphis parva*)
Mooreonuphis nebulosa (Moore, 1911)
M. stigmata (Treadwell, 1922)
Onuphis eremita parva Berkeley and Berkeley, 1941
O. elegans (Johnson, 1901)
O. iridescens Johnson, 1901
O. sp. A (=*Onuphis* sp. "intermediates" Hobson, 1971)

References:

Banse, K., and K. D. Hobson. 1974. Benthic errantiate polychaetes of British Columbia and Washington. Bulletin of the Fisheries Research Board of Canada 185: 82-84.

Fauchald, K., 1982. Revision of *Onuphis, Nothria* and *Paradiopatra* (Polychaeta: Onuphidae) based upon type material. Smithsonian Contributions to Zoology 356: 1 - 109.

Hobson, K. D. 1971. Some polychaetes of the superfamily Eunicea form the north Pacific and north Atlantic Oceans. Proceedings of the Biological Society of Washington, Vol 83 (47): 527-544.]

Paxton, H., 1986a. Generic revision and relationships of the family Onuphidae (Annelida: Polychaeta). Records of the Australian Museum 38 (1): 1-74.

_____. 1986b. Revision of the *Rhamphobrachium* complex (Polychaeta: Onuphidae). Records of the Australian Museum 38 (2): 75-104.

Acknowledgements:
We would like to thank David Vilas and Larry Lovell for suppling specimens of *Chaetopterus cf. variopedatus* and *Diopatra* spp., and for some helpful discussion on the identification of these two groups. Larry, in particular, provided Dean with the impetus to understand the chaetopterids. Thanks to Leslie Harris for allowing us the use of the Allan Hancock Foundation material and for providing valuable insight into the various problems associated with these two groups. Thanks to Debbie, Ross and Kelvin for proofing these notes.

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

July, 1992 Vol. 11, No. 3

NEXT MEETING:	Further Discussion on Provisional Species
GUEST SPEAKER:	None
DATE:	August 10, 1992 9:30am - 3:00pm
LOCATION:	Cabrillo Marine Museum San Pedro, California

AUGUST 10 MEETING: This meeting will again address the master species list of the Southern California benthos, the provisional species list, and the SCAMIT literature library and librarian.

MINUTES FROM SPECIAL MEETING ON JUNE 22:

Tony Phillips of Hyperion asked that lists of Diastylids commonly occurring in the Southern California Bight be sent to him at Hyperion Treatment Plant, Biology Laboratory, 12000 Vista del Mar, Playa del Rey, CA 90293. Please include depth distributions and station information.

Asellote Isopod Workshop: Dr. Buz Wilson from Australian Museum, Sydney started the meeting by dedicating it to Dr. J. L. Barnard. The main objective of the meeting was to provide a broader perspective on Asellote taxonomy based on his most recent research. Dr. Wilson reviewed the "basic format" for each Asellote family, and discussed the most useful taxonomic traits for separating super families; largely from the form of the male pleopods and

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SCAMIT newsletter is not deemed to be a valid publication for formal taxonomic purposes.

pleotelson. Females of different species within a genus are difficult to distinguish because they lack pleopod 1; looking at the form of pereopod 1 is a useful alternative. Of the families discussed, the Stenetriidae, Munnidae, Paramunnidae, and Janiridae are basically found in shallow water in the Santa Maria Basin and Western Santa Barbara Channel. Desmosomatidae are dominant in deeper water with Prochelator being the dominant genus. Please note that Joeropsis concava, previously known only from central California (91.5-221 m), has also been found as far south as Point Loma in depths of 60-116 m.

If you are is interested in receiving a copy of the "Taxonomic Atlas of the Benthic Fauna of the Santa Maria Basin and Western Santa Barbara Channel, Volume NN: The Isopoda, Part 2, Suborder Asellota, by George D.F. Wilson, Australian Museum, Sydney, 1992" please contact Diane O'Donohue at the City of San Diego, Marine Biology Lab, 4077 N. Harbor Drive MS-45A, San Diego, Ca 92101.

MINUTES FROM MEETING ON JULY 13:

Don Cadien announced that all of his literature has been entered into Procite 2.0. He recommends that if anyone is planning to upgrade to version 2.0 that they wait because there are still lots of glitches and version 2.02 will be out soon. He is now in the process of creating a list of keywords, and will send this list to anybody who is interested.

Miscellaneous Phyla workshop: John Ljubenkov discussed various problem animals. One of the animals discussed was Paranemertes. Coe described Paranemertes californica twice, once in 1904 and again in 1940. John examined his material and came to the conclusion that Paranemertes sp. A (SCAMIT) is actually a synonymy of Paranemertes californica sensu Coe 1904. He noticed that there were variations in the pattern of the ocelli, but that the stylets were the same in all specimens. John and Tony have found at some river mouth stations specimens of Paranemertes that are similar to the 1940 description by Coe. These specimens are most likely a new species. Voucher sheets will be written by John for both P. californica and P. sp. B?.

The bivalve mollusk Tellina was also discussed. John believes that there is a new species that displays a different color characteristic than T. carpenteri, but more closely resembles T. modesta in its morphology. The question remains whether it's a hybrid between T. carpenteri and T. modesta or a separate species. Dr. E. Coan and Paul Scott are looking at specimens of all three. The following table depicts the differences among the three specimens:

Tellina

	T. carpenteri	T. sp. A?	T. modesta
Sculpture	few concentric lines, mainly smooth	pronounced concentric lines with juvenile in proportions	like T. sp. A?, evenly concentric
Pallial line	see Coan(1971)	like T. modesta	see Coan(1971)
Color	pink	"variegated" pink and yellow	ivory white
Depth	occurs at 60 m	occurs at 60 m	occurs at 60 m more common shallower

John also demonstrated another technique for identifying Bullomorpha, which involves looking at gizzard plates. They typically have 3 gizzard plates located just behind the mouth. In Cylichnella, there are two plates of equal size and shape forming a pair while the third plate is different. These plates vary in shape and size for each of the different species. Philine and Cylichna both have 3 equal plates though Cylichna's plates are more elongated. See attached sheet for further details.

FUTURE MEETINGS:

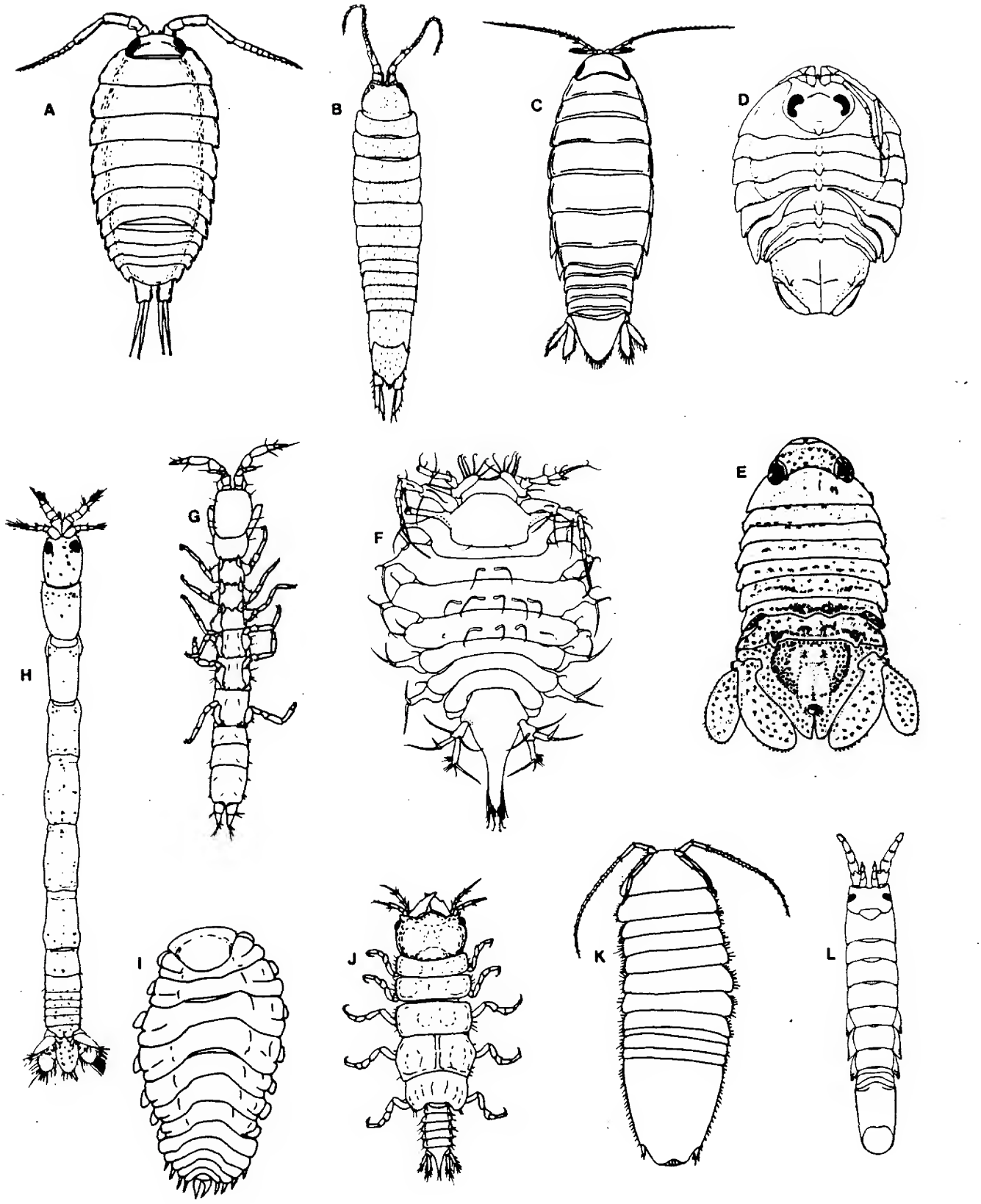
The September 14 meeting will have a report on the Fourth International Polychaete Conference by attending members of SCAMIT, Phillip Barrington of California Department of Fish and Game will give a talk on the Distribution of Invertebrate Fauna on Pinnacles in Carmel Bay, California and Drs. Mas Dojiri and Kirk Fitzhugh will lead a workshop on the preparation of taxonomic publications. This will be held at the Allan Hancock Foundation, University of Southern California, Los Angeles, California

The October 19 meeting (note not second Monday of month) will be on Diastylid Cumaceans with Tony Phillips of the Hyperion Treatment Plant at Cabrillo Marine Museum, San Pedro, Ca.

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4901
Treasurer	Ann Dalkey	(310)648-5317

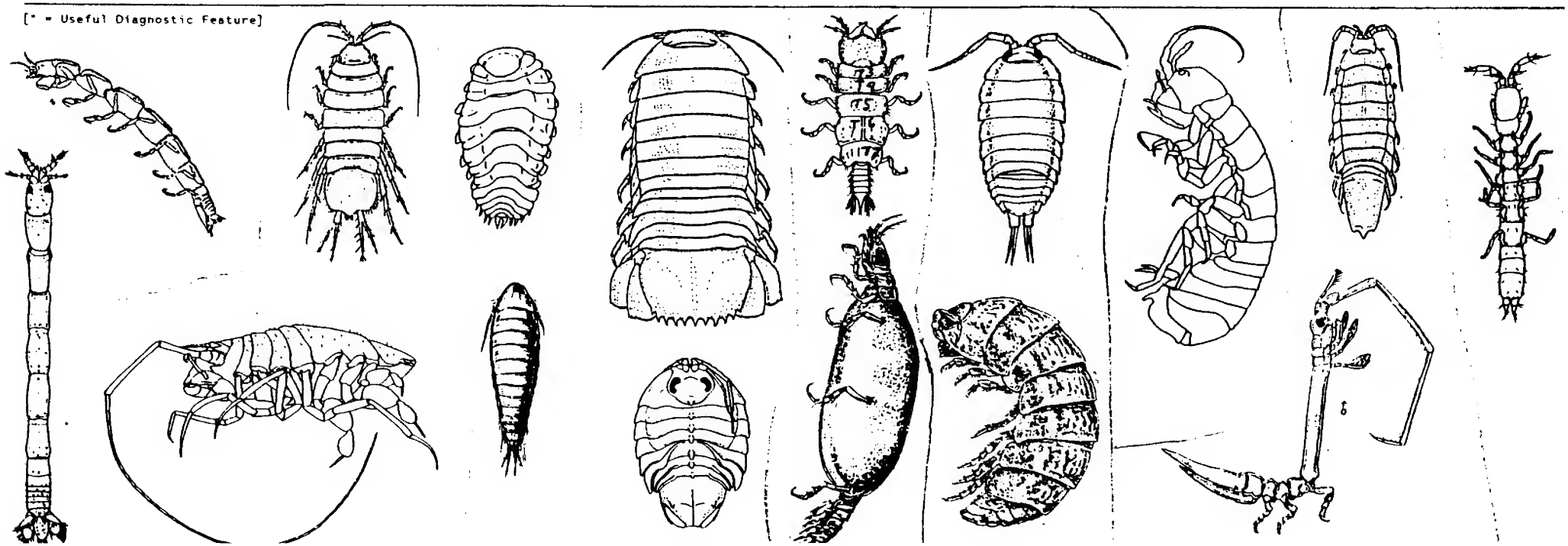


Examples of the Isopod Suborders: A, Ligia (Oniscidea); B, Mesamphisopus (Phreatoicidea); C, Cirolana (Flabellifera); D, Serolis (Flabellifera); E, Dynamenella (Flabellifera); F, Pleurocope (Asellota); G, Microcerberus (Asellota); H, Paranthura (Anthuridea); I, Pseudione (Epicaridea); J, Gnathia (Gnathiidea); K, Calabozoa (Calabozoidea); L, Cleantoides (Valvifera). All in dorsal view, not to scale.

MAJOR GROUPINGS OF [redacted]E ISOPODA AT A GLANCE

	Anthuridea	Asellota	Epicaridea	"Flabellifera"	Gnathiidea	Oniscidea	Phreatoicidea	Valvifera	Microcerberidae
Body Form & Locomotion	Elongate and slender* Swimming dimorphic	Flattened to variable Ambulatory	Distorted* to sac-like* degenerate	Flattened to enrollable good swimmers	Sexual dimorphism & metamorphosis	Flattened, often enrollable ambulatory only	Amphipod-like* Good swimmers	Flattened to caprellid-like some good swimmers	Elongate and slender* Ambulatory
Cephalon AII peduncle:	5 segments Mouthparts suctorial in some	eyes often absent 6 segments, scale* on seg.3 Mouthparts normal	3 segs.in male Mouthparts suctorial when present	5(6?) segments Mouthparts normal or suctorial. Mnd molar reduced or modified	4 segments Juv. mouthparts suctorial. Adults degenerate	AI tiny*, 3 segs. 4-5 segments M.parts normal Mxp palp distally reduced	5 segments Mouthparts normal	5 segments M.parts normal Mnd palp often absent Mxp palp reduced	Eyes absent 5-6 segments Mnd w/o palp
Pereon	T2-4 pereopods Subchelate*	Coxae small,unfused w/o epimeral plates anter./poster.Th.s may be fused	larval forms cf. flabelliferans* Adult Ths prehensile (hook-like),if pres.	Coxae epimeral and often fused to pereon	T2 fused to ceph*; T8 missing* only 5 free Th.s (adult manca)*	Coxae epimeral, fused to pereon	Coxae w/o epimeres T2-5-directed anter. T6-8 posterior T Bases 6-8 expanded	Coxae usually w. epimeres & fused to pereon	Coxae small, w/o epimeres Pers. rotated dorsally*
Pleon	Pl.1-2 normal Pl.I sometimes opercular Urs. sometimes block openings	Urs. styliform Pls.I-II modified & opercular Pls3-5,telson fused into single unit Pls.III-V branchial	All Pleopods branchial if pres. Pls.I-V for swimming in juveniles Urs. various	Pleonites free or fused Uropods sometimes form tail-fan	Pleonites all free. Urs. flat & biram. (but no tail-fan)	Pleonites rarely fused. Pleopods air breathing. Uropods styliform	Pleonites free Pls.I-V subeq., for resp. & swimming Uropods styliform	Pleonites fused variously to telson Uropods form operculum over pleopods	Pls.1-2 large Pl.3-5 & telson fused. Pleopods Uropods reduced or absent
Body Length	5-47mm	1-20mm	0.5-10mm	1-350mm	2-17mm	1-50mm	5-45mm	5-130mm	0.5-1.5mm
Fossil Record	Recent	Recent	Upper-Jurassic	Triassic	Recent	Eocene	Upper Carboniferous	Oligocene	Recent
Habitat	Marine Estuarine and fresh water	Marine, fresh water (incl. caves), rarely brackish	Marine & Estuarine	Marine, Fresh water, Some cavernicolous (Hot springs!)	Fish parasites as juveniles benthic & cryptic as adults	Terrestrial*, Amphibious, & fresh water	Fresh water (surface & ground) Relict Gondwanaland distribution*	Marine benthic	Interstitial*: marine & FW beaches & ground waters
Feeding	Carnivorous	Omnivorous Detritovorous	Ecto/endoparsites on Crustacea*	Carniv., fish parasites to Omniv.	Ectoparsites Adults non-feed.	Detritivorous Herbivorous	Detritivorous	Herbivorous & Omnivorous	Detritivorous
Num. Families	3	29	4	16	1	35	3	7	1

[* = Useful Diagnostic Feature]



Genera of Asellota (some recent new genera not included)
Data from Torben Wolff's catalogue

Abyssijaera
Abyssoniscus
Acanthaspidia
Acanthocope
Acanthomunna
Angeliera
Anneckella
Antennuloniscus
Antennulosignum
Asellus
Aspidarachna
Aspidoniscus
Astrurus
Austrogonium
Austroniscus
Austrosignum
Bacromesus
Bactromesus
Bagatus
Balbidocolon
Bathyopsurus
Betamorpha
Caecianiropsis
Caecijaera
Caecostenetroides
Chelator
Coperonus
Coulmannia
Dactylostylis
Dendromunna
Dendronunna
Dendrotion
Desmosoma
Disconectes
Disparella
Echinomunna
Echinopleura
Echinosone
Echinothambema
Echinozone
Ectias
Eugerda
Eugerdella
Eurycope
Exacanthaspidia
Fritzianira
Gnathostenetroides
Gomphomesus
Halacarasantia
Haplomesus
Haplomunna
Haploniscus
Hapsidohedra
Hawaianira
Hebefustis
Helomesus
Heterias
Heteromesus
Hydroniscus
Iais
Ianiroides
Ianiropsis
Ianisera
Ianthopsis
Iathrippa
Santia
Ilyarachna
Iolanthe
Iolella
Ischnomesus
Jaera
Jaerella
Janaira
Janira
Janiralata
Janirella
Janirella (Parjanirella)
Janthura
Joeropsis
Katianira
Kuphomunna
Lionectes
Lipomera
Lipomera (Lipomera)
Lipomera (Paralipomera)
Lipomera (Tetracope)
Mackinia
Macrostylis
Maresia
Mesosignum
Microcharon
Microjaera
Microjanira
Micromesus
Microparasellus
Microprotus
Microthambema
Mictosoma
Mimocopelates
Mirabilicoxa
Mixomesus
Momedossa
Munella
Munna (Metamunna)
Munna (Munna)
Munna (Neomunna)
Munneurycope
Munnicope
Munnogonium
Munnopsis
Munnopsoides
Munnopsurus
Nannoiniscus
Nannoniscidae
Nannoniscoides
Nannonisconus
Nannoniscus
Neasellus
Neojaera
Notasellus
Notoxenoides
Notoxenus
Oecidiobranchus
Paracanthaspidia
Paramunna
Paramunnopsis
Paropsurus
Pleurocope
Pleurogoniuim
Pleurogonium
Pleurosignum
Prochelator
Protocharon
Protojanira
Pseudarachna
Pseudojanira
Pseudomesus
Pseudosellus
Rhacura
Santia
Stenasellus
Stenetrium
Stenobermuda
Storthyngura
Stylomesus
Sugoniscus
Synasellus
Syneurycope
Thambema
Thaumastosoma
Thylakogaster
Torwolia
Trichopleon
Tytthocope
Urias
Uromunna
Vemathamben
Whoia
Xostylus
Zoromunna

Composition of the Janiridae

Genera Included by Wolff (1962). The broad definition of the Janiridae (Wolff, 1962) permitted the inclusion of a great deal of morphological diversity. Wolff's concept of the family recognized the following genera as valid members of the Janiridae:

Abyssijaera Menzies, 1962b (= *Katianira* Hansen, 1916)
Acanthaspidia Stebbing, 1893
Angeliera Chappuis and Delamare, 1954
Bagatus Nobili, 1906
Caecianiropsis Menzies and Pettit, 1956
Caecijaera Menzies, 1951a
Carpias Richardson, 1902
Ectias Richardson, 1906
Heterias Richardson, 1904b
Iais Bovallius, 1886
Ianiropsis G.O.Sars, 1897b
Ianthopsis Beddard, 1886b
Iathrippa Bovallius, 1886 (senior synonym of *Notasellus* Pfeffer, 1887)
Iolella Richardson, 1905a
Jaera Leach, 1814
Jaerella Richardson, 1911b
Janiralata Menzies, 1951b
Janira Leach, 1814
Janirella Bonnier, 1896
Janthura Wolff, 1962
Katianira Hansen, 1916.
Mackinia Matsumoto, 1956
Microcharon Karaman, 1934
Microjaera Bocquet and Levi, 1955
Microparasellus Karaman, 1933
Microprotus Richardson, 1909 (not Vanhöffen, 1914 as in Wolff, 1962)
Neojaera Nordenstam, 1933
Protocharon Delamare and Chappuis, 1956
Protojanira Barnard, 1927
Pseudasellus Chappuis, 1951 (= *Heterias* Richardson, 1904b)
Pseudojanira Barnard, 1925
Rhacura Richardson, 1908
Spinianirella Menzies, 1962b (= *Dactylostylis* Richardson, 1911a)
Trichopleon Beddard, 1886a
Xostylus Menzies, 1962b

Genera added since 1962. The following genera have been assigned to the Janiridae by various authors. Some of these genera are junior synonyms of earlier taxa (given here in parentheses).

Austrofilius Hodgson, 1910 (brought out of synonymy by Schultz, 1976)
Austroniscoides Birstein, 1963 (= *Janthura* Wolff, 1962)
Fritzianira De Castro and Lima, 1977 (= *Heterias* Richardson, 1904b)
Hawaianira Miller, 1967
Ianiroides Kensley, 1976 (= *Ectias* Richardson, 1906)
Ianisera Kensley, 1976 (= *Neojaera* Nordenstam, 1933)
Janaira Moreira and Pires, 1977a
Janatus Carvacho, 1983 (= *Bagatus* Nobili, 1906)
Janthurella Kussakin, 1982 (= *Katianira* Hansen, 1916)
Microjanira Schiecke and Fresi, 1970

Microthambema Birstein, 1961 (included by Kussakin, 1988)
Natalianira Kensley, 1984a
Thambema Stebbing, 1912 (included by Kussakin, 1988)
Vermectias Sivertsen and Holthuis, 1980.

Adjustments to the composition of the Janiridae. We here limit the Janiridae to a smaller group of genera. The following paragraphs indicate the current placement of genera removed from the janirids. These adjustments are made based on reasons external to the definition of the Janiridae.

Microprotus, despite its complete lack of swimming pereopods, is a derived member of the Munnopsidae *sensu lato* (Wilson, 1989; Wilson, Kussakin, and Vasina, 1989). Its closest relative in the Munnopsidae seems to be *Storthyngura* Vanhöffen, 1914.

The genera *Abyssijaera*, *Janthurella*, *Katianira*, and *Natalianira* have been removed to the new family Katianiridae by Svavarsson (1987), and are reduced to two genera. *Katianira* now contains the species of *Janthurella* and *Abyssijaera*. *Natalianira* is retained as a valid genus of the Katianiridae.

Protojanira and *Pseudojanira* have been removed from the Janiroidea. *Protojanira* is placed in its own family with the genera *Enckella* Fresi, Idato and Scipione, 1980, and *Anneckella* Chappuis and Delamare, 1957; this family is considered to belong to either the Protojaniroidea (Sket, 1982; Wägele, 1983) or the Gnathostenetroidoidea (Wilson, 1987). *Pseudojanira* has been placed in its own monotypic family and superfamily (Wilson, 1986a, 1987), although the superfamily assignment is subject to revision when more specimens and species are found.

The family Microparasellidae Karaman, 1934, has continued to be recognized (Birstein and Ljovuschkin, 1965a,b; Coineau, 1968, 1969, 1986), despite Wolff's elimination of the family. We discuss this family below.
The genera included in the Microparasellidae are *Microparasellus*, *Angeliera*, *Microcharon*, and *Paracharon* (Coineau, 1969).

Janirella and *Dactylostylis* (senior synonym of *Spinianirella*; see Hessler, 1968) belong to the Janirellidae Menzies, 1956, following the composition of family of Menzies (1962b). We, however, exclude the genus *Rhacura* from the Janirellidae until this genus can be more carefully described. These genera have synapomorphies that clearly separate them from the Janiridae, so their classification in this family by Kussakin (1988) is not used here.

The family Acanthaspidiidae Menzies, 1962 is currently recognized (Bowman and Abele, 1982), although Menzies and Schultz (1968), who added several new genera to it, offered no arguments rebutting Wolff's (1962) removal of the family. We do not follow Kussakin (1988) who included *Acanthaspidia* into the Janiridae, and instead assert that the family is indeed valid. Acanthaspidiids can be defined as janiroideans that have enlarged pereonal lappets, narrow or finger-like mandibular molars, broad maxillipedal endites with narrow palps, third pleopods with many plumose setae on both rami, and elongate uropodal sympods. Most species of this family also have dorsal spines. The family contains *Acanthaspidia* Stebbing, 1893, *Iolanthe* Beddard, 1886, *Paracanthaspidia* Menzies and Schultz, 1968, and *Exacanthaspidia* Menzies and Schultz, 1968. This family needs revision because the latter two genera are scarcely different from *Acanthaspidia*. The genus *Ianthopsis* is clearly a sister group of the Acanthaspidiidae, because it has most

apomorphies that define this family. *Ianthopsis* is not a janirellid as suggested by Menzies (1962b), and it should not be classified in the Acanthaspidiidae because it has unreduced mandibular molars and functional eyes, which are lacking in the Acanthaspidiidae *sensu stricto*. Under a new definition of the flamily, however, *Ianthopsis* might be included in the Acanthaspidiidae. The correct classification of *Ianthopsis* will have to wait until a revision of the family.

The Thambematidae, including the genera *Thambema* and *Microthambema*, is a well-defined family (Harrison, 1987). Consequently, we do not follow Kussakin (1988) in including this family into the Janiridae.

Jaerella, *Rhacura*, *Iolella* have some characters in common but are assigned to *Incertae Sedis*. *Trichopleon* and *Xostylus* are both poorly described and are derived deep-sea genera that have no place in the Janiridae. These two genera need revision before their exact affinities can be resolved, so they are temporarily assigned to *Incertae Sedis*. *Vermectias* is so aberrant that it will require further study to determine its exact affinities. We do not favor its placement in the Janiridae. The composition of these genera are discussed nevertheless.

NAVY Dumpsite 103 Isopod Descriptions

MUNNOPSIDAE Eurycopinae

Eurycope

sp. 1 — Somewhat similar to brevirostris, two large rostral spines, good spec. at station 1. Also at stas. 2, 4, 5, 6, 7, 9, 10

californiensis Schultz, 1966

It is probably this species - his description was really bad. Large, main-type Eurycope with robust natasome. Mxp epipod with lateral lobe, and 4 coupling hooks on endite. Uropod with strong medial lobe. Projecting medial lobe on AI with a few strong setae. Rostrum narrow, slightly overhanging with a few small setae. Fragmentary male at sta. 5 has pl.II with tiny "vermiform appendage" and odd stylet that has a sharp right angle approximately at the level of the sperm opening. Frags at sta. 2, 5, 10.

Munneurycope

pellucida Birstein, 1970

Pelagic species originally gotten over the Kurile Kamchatka Trench. Juvenile male individual was damaged but is similar to the described species. This species probably is not *Munneurycope sensu stricto* as in *E. murrayi* because it lacks the muscular bases to PII-IV. The uropod is elongate with a tiny exopod. At sta. 10.

Genus indet.

sp. 1 — Not well characterized yet. Manca only at sta. 4. Pleotelson curls down Munneurycope style. Intermediate width quadrate nonoverhanging rostrum. Uropodal rami thick, no medial lobe. AI without medial lobe. At stas. 4, 5

MUNNOPSIDAE Ilyarachninae

Ilyarachna

cf. *profunda* — Seems to be same species, but specimens so far don't show the strong marginal setae seen in the illustrations. Pereonite 4 is longer because of larger basal muscles for the pereopod IV: these produce a visible dorsal bulge in adults. At Stas. 1, 5 (frags), 10

Pseudarachna

sp. 1 — Row of broad setose bumps on pers 2-4. New species. At stas. 2,

MUNNOPSIDAE subfamily incertae sedis

Betamorpha

sp. 1 — Not like any other species, probably new. Vertex is straight, (barely sinuous). Uropod exopod is thicker than and as long as medial lobe of protopod; protopod has few setae. Probably most similar to longiramosa Mezhov 1981. At stas. 2, 5, 6, 9

NAVY Dumpsite 103 Isopod Descriptions

DESMOSOMATIDAE Desmosomatinae

Mirabilicoxa

sp. 1 — This species seems to best fit in this genus. Coxae are small to intermediate, small uropodal exopod, cephalic lateral spines, pereopods I-II like acuminata. Combination of features like M. richardsoni, but perepods are different and has spine on coxa I. Good spec at sta 1. Also at stas. 6, 8

sp. 2 — Male has much longer coxal spines. No cephalic spines. No uropodal exopod. Per II paucisetose. Male: small AII, narrow Per V-VII carpus-propodus, body translucent, opalescent. Good spec. at sta 1. Also at sta. 2, 6, 8, 10

Desmosoma

sp. 1 — Male: Intermediate length coxal spines, compact body and spines. No pleonal spines, broad rounded flange instead. Per I small but similar to per II. Heavy AII, pers V-VII with broad carpus-propodus. Females are larger and have better developed per II. Uropods uniramous (feature of genus). At Sta. 1, 6, 8, & Reference Sta.

Momedossa

symmetrica (Schultz, 1966) — Uropodal exopod thin. Pltn spines. Coxal spines triangular. Large smooth head, with lateral spines. Per I similar to that of *Mirabilacoxa*. At Sta. 1, 2, 3, 5, 8. Illustrated male in Sta. Maria Basin Atlas.

Eugerda

sp. 1 — Small ur exopod. Long thin body. Large. PI without setae. Easily broken. At Sta. 1, 2?, 8, 9, 10.

DESMOSOMATIDAE Eugerdellinae

Eugerdella

sp. 1 — Almost nannoniscid like. Heavy PI with 3 lg carpal spines. Pers II-IV are flattened, few setae. Uropod with tiny exopod. Triangular spines on coxae I-III. Pltn w. short broad lateral spines. At Sta. 1.

sp. 2 — pugillator type. Not well characterized: manca 3 only at sta 2.

Prochelator

sp. 1 — Cephalon, per I-III with spines. Uropod with tiny or?? absent exopod. Per I robust, with 4 large setae. Per 1 not especially enlarged. In male cephalon vaulted, with large AII. Small as adults. At Sta. 1, 5, 8.

sp. 2 — Per I-III coxae without spines. Cephalon with large lateral spines. Per 5 with anteriorly curved short spine. Per I with one large chelate seta and one smaller seta. Small as adults. At Stas. 1, 2, 3, 4, 5, 8, 9

NAVY Dumpsite 103 Isopod Descriptions

MESOSIGNIDAE

Mesosignum cf. *asperum* Menzies & Frankenburg, 1968

Appears to be very close to this species although the pltn spines are longer (this might be a variable trait). All lateral margins and projections with elongate thin spines. Only 2 spines on pleotelson. No spine-projections on per 1 and 7. Spine-projection on per 2 is thick, pointed and club-like. At stas. 2,

KATIANIRIDAE

Katianira

sp. 1 — Abyssijaera type, with robust pereopods. Dorsal surface relatively smooth. Cephalon frontal margin rounded. Uropods large, flat, rounded. At stas. 2,

JANIRELLIDAE

Janirella

cf. *ornata* Birstein 1960

Similar, but spines on dorsal surface and lateral projections are somewhat longer (variation?), and AI2 is larger. Pleotelson with 1 large and two anterior small spine/projections. Only one major (lightly spined) spine/projection on each lateral margin of each segment including cephalon. At stas. 2,

HAPLONISCIDAE

Haploniscus

sp. 1 — Cephalon with thick rostrum terminating in short dorsally curving point. AII spine tapering to thin point with one seta on posterior margin. Pers 5-7 & pltn with distinct sutures. Cuticle smooth, shiny. Lateral margins largely quadrangular. Only tiny teeth between pers 4 and 5. At stas. 2 (mancas), 4 (3 females), 5*,

ISCHNOMESIDAE

Ischnomesus

sp. 1 — Not well characterized yet (fragments at sta 2). Very large species with shiny opalescent cuticle. Rounded pleotelson posteriorly, no posterolateral spines. At stas. 2,

sp. 2 — No spines anywhere. Thin cuticle. Well developed, sharp clypeal ridge. Long thin setae projecting laterally from pereonites 4-5. At stas. 6,

Haplomesus

sp. 1 — Similar to H. modestatenuis Menzies & George 1972. Rough cuticle. Pltn posterolateral points having truncate ends extended by fat setae. Spines on pers 1-4 long, shortX3. AI-II on short pedestal. At stas. 2, 9

NANNONISCIDAE

Nannoniscus

sp. 1 — Rostrum not protruding. Pleotelson with lateral sinuous flange. Uropods nearly covered by posterior rounded anal projection. Pleopod II operculum with large spine. Suspect per 6-7 fused. Probably large species: at sta 2 mancas only and these are large. In adult males, per 1-3 margins strongly projecting anteriorly. At stas 2, 5 (male), 6, 9

cristatus Mezhov (1986)

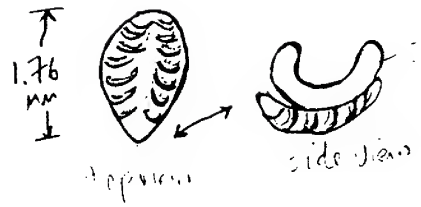
Nearly identical to Mezhov's drawings, although for some reason he doesn't illustrate the large ventral spine just in front of the pleotelson on ventral surface. Interesting feature of this species are the large tergal spines terminated by thick setae on pers 2-4. Pltn without posterolateral spines. Also spiny protrusions on ventral surface midline of pers 2-4. At stas. 6, 9

Exiliniscus

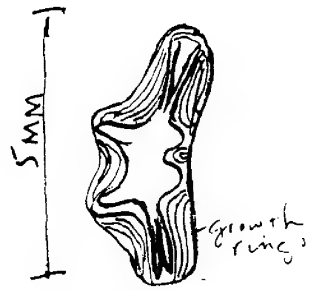
sp. 1 — Pereopods with few setae. Probably a new species. At stas. 4,

GIZZARD Plates of some Bullomorpha

compiled by J. Ljubenkov 7/92

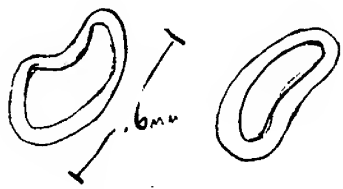


1. Haminoea virescens

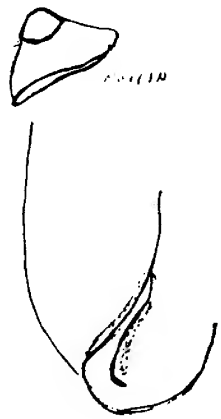


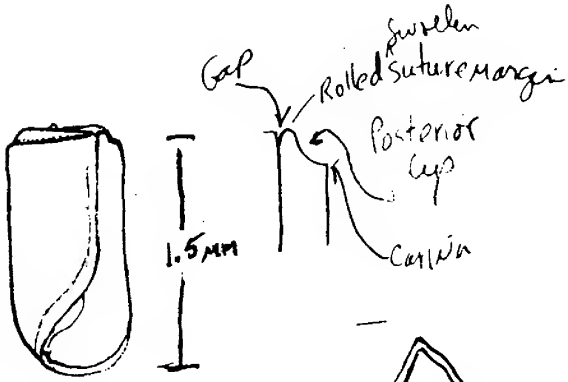
2. Bulla gouldiana

3. Cylichnella culcitella



4. Cylichnella harpa (from Alaska)





5. Cylichnella inculta

posterior

unpaired plate

6. Cylichna diegensis

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

August, 1992 Vol. 11, No. 4

NEXT MEETING:

9:30-10:00am	Business meeting
10:00-11:00am	"Distribution of Invertebrate Fauna on Pinnacles in Carmel Bay, Ca."
11:00-12:00am	Report on Fourth Intl. Polychaete Conference
12:00-1:00pm	Lunch
1:00-3:00pm	Workshop: Preparation of Taxonomic Publications

GUEST SPEAKERS:

10:00-11:00am	Philip Bairrington- California Department of Fish and Game
11:00-12:00am	Larry Lovell- private consultant, Ann Dalkey- Hyperion and Dr. Kirk Fitzhugh- Los Angeles County Museum of Natural History (LACMNH)
1:00-3:00pm	Drs. Mas Dojiri- Hyperion and Kirk Fitzhugh- LACMNH

DATE: September 15, 1992 ****note Tuesday not Monday**

LOCATION: Times Mirror Room of LACMNH ****note change of location**

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SCAMIT newsletter is not deemed to be a valid publication for formal taxonomic purposes.

SEPTEMBER 14 MEETING: Philip Bairrington, California Department of Fish and Game, will present slides and video on "Vertical Zonation Patterns of Rocky-wall Communities in Carmel Bay". A report on the Fourth International Polychaete Conference, Angers, France will include an oral presentation by Dr. Kirk Fitzhugh (LACMNH) titled "A Cladistic Analysis of Polychaete Families", and poster presentations of Larry Lovell, Ann Dalkey and Karen Green. Larry will also present a brief slide show highlighting conference activities.

MINUTES FROM MEETING ON AUGUST 10:

Dr. Bruce Thompson of the Southern California Coastal Water Research Project (SCCWRP) submitted a proposal to the U.S. EPA to produce a master species list of benthic infauna of the Southern California Shelf. This proposal is part of an effort to create a regional monitoring program. He requested that SCAMIT be the subcontractor in the production of this list. One of the problems discussed was whether SCAMIT can receive money as payment and still remain a non-profit organization. There were also concerns about publication, use of, and authorship rights to the list. More information is needed from SCCWRP before SCAMIT can sign a contract.

The rest of the morning was spent talking about SCAMIT's master species list. Tom Parker of the Los Angeles County Sanitation District has combined species lists of the four major discharging agencies with Leslie Harris' updated polychaete list. This combined list will be sent to the contributing agencies to verify that their portion of the list is correct and clarify any other problem areas. It will then be distributed to the membership for comment.

The provisional species list was reviewed in the afternoon. The individuals who originally identified the specimen as provisional were added to the list. These people will be contacted to determine if they intend to publish a description of the species or if they know who is working on it. If no publicaton is pending, then other members of SCAMIT may be solicited to publish it.

FUTURE MEETINGS:

The October 19 meeting (note: third Monday of the month) will be on Diastylid Cumaceans presented by Tony Phillips of the Hyperion Treatment Plant. The meeting will be held at the Cabrillo Marine Museum, San Pedro, Ca. Please contact Tony and inform him of any taxonomic problems or interesting specimens you may have of Diastylids.

The November 16-17 meeting (note: third Monday and Tuesday of the month) will be an Amphipod Workshop given by Dr. E. L. Bousfield of the Royal British Columbia Museum, Victoria, British Columbia, Canada. The meeting will be at the Los Angeles County Museum of Natural History, Los Angeles, Ca. Dr. Bousfield will emphasis Phyletic classification of amphipods and the rational for it, and provide a preview of his forthcoming west coast amphipod guide book, coauthored with Craig Staude.

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

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Vice-President	Larry Lovell	(619)945-1608
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3720 Stephen White Drive
San Pedro, California 90731

September, 1992 Vol. 11, No. 5

NEXT MEETING:	Diastylid Cumaceans
GUEST SPEAKER:	Tony Phillips Hyperion Treatment Plant
DATE:	October 19, 1992 **(note third Monday)** 9:30am - 3:00pm
LOCATION:	Cabrillo Marine Museum San Pedro, California

OCTOBER 19 MEETING: Remember to bring any interesting diastylid specimens or taxonomic problems to the meeting.

MINUTES FROM MEETING ON SEPTEMBER 15:

Ron announced that Dr. Bruce Thompson is leaving Southern California Coastal Water Research Project (SCCWRP) to work in the San Francisco Bay area. Prior to leaving SCCWRP, Bruce Thompson signed a contract with the U.S. EPA to produce a master species list of benthic infauna of the Southern California Shelf. SCAMIT is still investigating the legalities for being the subcontractor in the production of this list.

FUNDS FOR THIS PUBLICATION PROVIDED IN PART BY THE ARCO FOUNDATION, CHEVRON USA, AND TEXACO INC.

SCAMIT newsletter is not deemed to be a valid publication for formal taxonomic purposes.

Don Cadien of the Los Angeles County Sanitation District informed us that two new species of Thalanassinoid shrimp, Econaxius acutifrons and a species of Calocarides (in preparation), are occurring. Don plans on revising his notes and key. If anyone is interested in this information please contact Don.

The Treasurer, Ann Dalkey, reported that there is $2,958 in the SCAMIT savings account.

The first speaker, Philip Bairrington, California Department of Fish and Game at Long Beach Ca., presented slides and video on "Vertical Zonation Patterns of Rocky-wall Communities in Carmel Bay, California". He demonstrated that there was vertical zonation related to light, temperature, scouring, competition, colonization, etc. If anyone is interested in inquiring about receiving a copy of the video of the canyon wall please contact Philip Bairrington, California Department of Fish and Game (Long Beach), at (310) 590-5166.

Larry Lovell presented a slide show on the Fourth International Polychaete Conference, Angers France. Posters by Ann Dalkey-Hyperion, Karen Green-consultant, and Larry Lovell-consultant were on display along with literature and handouts from the conference.

Dr. Kirk Fitzhugh, Los Angeles County Museum of Natural History Museum (LACMNH), concluded the morning with a presentation entitled "A Cladistic Analysis of Polychaete Families" which he delivered at the polychaete conference. He presented evidence that the polychaeta is a monophyletic group. The cladistic program he used was Hennig-86. The analysis was based mainly on external morphology but Kirk did not rule out using internal structures. One of the features he used to separate polychaeta from sipuncula, echiura, and oligochaeta was the presence or absence of nuchal organs. The groups sedentaria and errantia are separate (paraphyletic) within the polychaeta. Sedentaria is composed mainly of the terebellid morphology and the group itself is unstable. The errantia group is composed mainly of the eunicid and phyllodocid morphology and is more derived and thus more stable. A copy of his abstract is included in the newsletter.

In the afternoon, Drs Masahiro Dojiri, Hyperion Treatment Plant, and Kirk Fitzhugh presented a workshop on the preparation of taxonomic publications. Mas covered the steps involved starting from specimen collection and preservation to final publication. This proved to be very informative and helpful. Included in the newsletter is a handout that Dr. Dojiri put together for the workshop.

Also included in the newsletter is the Fall 1992 schedule of research seminars at the Natural History Museum of Los Angeles County.

The SCAMIT Christmas party has been scheduled for Saturday, December 5 at Cabrillo Marine Museum.

FUTURE MEETINGS:

The November 16-17 meeting (note: third Monday and Tuesday of the month) will be an Amphipod Workshop given by Dr. E. L. Bousfield of the Royal British Columbia Museum, Victoria, British Columbia, Canada. The meeting will be at the Los Angeles County Museum of Natural History, Los Angeles, Ca. Dr. Bousfield will emphasize phyletic classification of amphipods and the rational for this classification. He will also provide a preview of his forthcoming west coast amphipod guide book, coauthored with Craig Staude. Please bring any problem specimens and any problems you may have encountered with the Barnard Monograph on Gammarid Amphipods to the meeting.

The December 14 meeting will include discussions of Polycirrinae Terebellid Polychaetes by Leslie Harris of the LACMNH, and a talk entitled "Blue Water Plankton" by Dr. Bill Hamner of the University of California, Los Angeles. The meeting will be held at the Allan Hancock Foundation room B-55, University of Southern California, Los Angeles, Ca.

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4901
Treasurer	Ann Dalkey	(310)648-5317

CLADISTIC ANALYSIS OF RELATIONSHIPS AMONG THE POLYCHAETE FAMILIES.

Fitzhugh J.K.(*) & Fauchald K. Natural History Museum of Los Angeles County, Los Angeles, CA 90007 and National Museum of Natural History, Smithsonian Institution, Mail Stop 163, Washington D.C. 20560 USA.

Some major taxa, e.g., the aphroditids and eunicids, both sensu latu, have been recognized consistently as natural groupings for 100+ years. The traditional separation of the polychaetes into two groups and all other proposed groupings into suprafamilial taxa have been only moderately successful. Classificatory studies differ from evolutionary studies in that the presence of links between the groups need not be specified. Most systematists believe that their classification, including the order in which the taxa are presented, reflect phylogeny. In most cases the phylogenetic arguments are not explicit. Any phylogeny based on these schemes would uncover paraphyletic groupings. We are here presenting a new phylogenetic analysis of the relationships among the polychaete families.

We have analyzed the characters traditionally used to define taxa at the family-level and defined character states so that members of all families can be scored unequivocally. We have added, mostly anatomical, characters previously rarely considered, or at least considered only one at a time. We scored, if possible, the characters for a specimen of the type species of the type genus for each family (on classificatory rather than cladistic grounds); medium-sized to large specimens were used preferentially. Small specimens and indeed all specimens of small species, tend to have less developed anterior appendages, less complicated parapodia and often fewer kinds of chaetae than larger specimens (or species). We also assumed initially that all families as currently recognized were monophyletic. The cladistic program used was Hennig-86; options will be presented in the talk. Autapomorphic characters defining single terminal taxa were excluded from the analysis: We find it unlikely that for example the joint absence of the ventral shield of the sternaspids carry much weight as a synapomorphic feature for all non-sternaspid polychaetes. Outgroup taxa included echiurans and sipunculans in addition to oligochaetes.

The major taxa listed above were confirmed as being monophyletic. The families of the Phyllodocida can be ranged together; similarly families with dorsal feeding palps (or some modification of these) can be grouped in a single sequence. We are at this point debating the position of other families, especially the orbiniids, paraonids, maldanids, capitellids, opheliids and the small families usually listed near these families.

SCAMIT PUBLICATION WORKSHOP

(EMPHASIS ON SMALL CRUSTACEA)

Masahiro Dojiri

I. SPECIMEN COLLECTION AND PRESERVATION

II. SPECIMEN IDENTIFICATION AND NEW TAXA DETERMINATION

A. Clear and examine specimens
B. Determine that all specimens in collection are same species
C. Assess number of adult females and males
D. Measure females and males (10 of each)
(Conversion sheet, magnification scales, and measurement sheet)
E. Select specimens for dissection
F. Dissect females and males
G. Conduct literature research

(1) Personal library of reprints
(2) Zoological Records
(3) Correspondence with recognized experts in field

H. Specimen identification - verify generic identification
I. Diagnostic notebook or table - taxonomic character comparison between new taxon and previously described taxa

III. SELECTION OF TYPE-SPECIMENS AND SPECIMENS FOR DISSECTION

A. Holotype, allotype, and paratype
B. Temporary labeling of material; use pencil
C. Write material examined sheet

IV. DISSECTION OF SPECIMENS

A. Wooden slide procedure of Humes and Gooding (1964)
B. Dissecting equipment, minuten pins, and Arkansas stones
C. Proper technique and arrangement of appendages

V. DETAILED EXAMINATION OF DISSECTED SPECIMENS

A. Search for armature and ornamentation; detailed studies of publications will help in suggesting what elements and ornamentation to search for
B. Examine dorsal/ventral and anterior/posterior surfaces of appendages
C. Examine both members of a paired appendage

D. Examine at least three or more dissected specimens, i.e., 6 first antennae, 6 mandibles, etc.
E. Examine under oil of immersion
F. Sketch schematic drawings of complicated appendages, e.g., first antenna

VI. PENCIL ILLUSTRATIONS

A. Select appendages for illustrations; whole mount views (dorsal and lateral) are drawn last after all appendages are illustrated

(1) Choose clean appendages: no debris attached
(2) Choose appendages with no rips in integument: cuticle entire
(3) Choose appendages with all elements (setae/spines) and ornamentation (patches of setules/spinules) intact and clearly visible

B. Orientation of appendage for illustration

(1) Choose accepted view of appendage: view drawn in majority of publications (ease in future comparisons)
(2) Choose view that has fewer ghosted setae or shows ornamentation best
(3) Appendage or whole mount in bad orientation can be arranged into a good orientation by whole coverglass/depression slide, broken cover glass, or petroleum jelly techniques

C. Selection of optimum magnification at which to make drawings

(1) Objective adjustment
(2) Drawing tube magnification, adjustment, and focusing

(a) Select drawing tube magnification
(b) Turn-down light on microscope
(c) Turn-on external light source
(d) Focus on tip of sharp drawing pencil

D. Selection and orientation of paper

(1) Majority of drawings can be done on letter size paper (8 1/2" X 11")
(2) Some drawings require legal size (8 1/2" X 14")
(3) Very few drawings will necessitate taping several sheets together: make several "X" marks at joints of papers for future realignment
(4) Photocopy enlargement or reduction for initially suboptimum drawing size

(a) It is always easier to draw large (high

magnification) for the details, then do a photocopy reduction

(b) If under highest magnification the resulting drawing is still too small, photocopy enlarge the drawing

E. Adjustment of microscope diaphragm, condenser, light intensity, and external drawing light to get optimum drawing conditions

F. Make pencil drawing

(1) Tape paper down
(2) Record magnification of microscope, magnification of drawing tube, female or male specimen, appendage, and view (dorsal/ventral, anterior/posterior)
(3) Draw with sharp 3H or HB pencil
(4) Inspect drawing several times while in progress; make sure appendage is not floating in clearing medium
(5) Verify all armature and ornamentation
(6) Darken pencil drawings while making irregular lines smoother. Remember: indentations, irregular surfaces, and curves may be characteristic for this genus or species. Verify all cosmetic changes before completion of pencil drawings
(7) Verification of final pencil drawing with corresponding appendage of other dissected specimens; note any morphologic variations and draw if necessary
(8) Illustrate magnified views (call-outs) of complex, taxonomically important, or difficult to observe details, e.g., highly ornamented spines.
(9) Jot down important notes directly on pencil drawings. These act as reminders when writing descriptions.

VII. Writing the manuscript

A. Write material examined section

(1) Holotype, allotype, and paratypes; leave blanks for museum catalog numbers
(2) Locality, depth, host, attachment site of parasite, date of collection, etc.

B. Write taxononmic description (generalized text: not formatted for any specific journal); never ink plates until taxonomic description is written: there are always mistakes in the pencil drawings, e.g., missed setae, spines, etc.

(1) Use good taxonomic publication in your specific group as a guideline, e.g., Humes, Kabata, Cressey,

Ho, and Boxshall; examine and study their approach

(2) Be as detailed as possible in taxonomic descriptions

(a) Describe and illustrate every appendage
(b) Describe and illustrate every seta, spine, setule, patch of spinules, etc.
(c) Readers can ignore what they want, but can't mind-read

C. Write remarks section

(1) Diagnostic comparison table
(2) If the genus is very large, comparisons with every species is tedious and time-consuming for the authors to write and the reader to decipher

(a) Select species living in regional area for diagnostic comparisons or
(b) Select species with shared unusual morphologic features

(3) Emphasize unique characters: "The new species can be distinguished from all known species of the genus by ..."

D. Selection of new name (see "Code of Zoological Nomenclature")

(1) Selection of new specific name - does not have to be unique (binomen must be unique)

(a) Descriptive name, e.g., spinosus, longicauda, etc. (adjective or noun in apposition); use Brown, R.W. 1956 (reprinted 1978, 1979). Composition of scientific words. Smithsonian Press.
(b) Host name, e.g., embiotocae, plotosi, etc. (genitive singular or plural)
(c) Name in honor of someone who contributed significantly to the specific field or did considerable amount of work on research, but not enough for coauthorship, e.g., collected specimens, hĕlped in literature search that was important for publication
(d) Locality name, e.g., brasiliensis, californianus, etc.
(e) Verify that binomen does not already exist

(2) Selection of new generic name - must be unique

(a) Check "Nomenclator Zoologicus" for generic names: a list of existing names of genera and subgenera in zoology from the tenth edition of Linnaeus (1758) to the end of 1935
(b) Check "List of new generic names" of

"Zoological Records" starting from 1870 to current issue

(c) Check also "Index Animalium"

(d) Warning; example of Scolocercos ("thorned tail" used by Ragge in 1980 for insect) so changed to Scoloura; Kronos was changed before publication to Norkus; and Tandanicola was changed to Arrama.

E. Write etymology

(1) Origin of name (Latin, Greek, anagram, etc.)
(2) Gender, noun or adjective
(3) What name alludes to
(4) Example: "The specific name spatha, a Latin feminine noun meaning broad sword without a point, alludes to the broad truncate tines of the sternal furca of the female copepod; it stands as a feminine singular noun in apposition to the generic name."

F. Write introduction

(1) Describe collection of specimen or how you obtained them
(2) Discuss genus if new species; discuss family if new genus

(a) Mention zoogeographic distribution
(b) Discuss species within genus or genera within family: number, habitats, natural history, evolutionary relationships; whatever you think is necessary and important

(3) Discuss new taxon as subject of the paper

G. Write material and methods

(1) This section is easiest to write
(2) Include museum address where types are deposited
(3) Include status of dissected specimens: museum or collection of author (Remember to make permanent mounts of dissected specimens after paper is published or in press)

H. Write abstract

(1) Keep it short
(2) Include only pertinent information

(a) Locality, habitat, depth of collection, etc.
(b) Diagnostic features of new taxon
(c) Possible evolutionary of morphologic affinities

I. Compile literature cited

(1) Verify that all citations in text are in literature cited section
(2) Verify that all literature cited references are all actually cited in text
(3) Authorities and dates as part of taxonomic names are not normally cited by journals if not used also in the text

VIII. Choose journal

A. Journal specializing in your specific group, e.g., Journal of Crustacean Biology, Systematic Parasitology
B. Journal specializing in taxonomy, e.g., Proceedings of the Biological Society of Washington, Journal of Natural History, etc.
C. Journal published in a region (locality) where specimens were collected, e.g., Canadian Journal of Zoology, Australian Journal of Zoology, etc.
D. Examine reproduction of illustrations, quality of paper, and format of journal

IX. Ink figure plates

A. Choose plate size

(1) Measure full text page of journal article
(2) Allow space of about 1/2" - 3/4" for figure legend
(3) Blow-up to about 2 1/2 times resultant measurements

B. Cut plates
C. Tentative arrangement of pencil illustrations on plate

(1) Try to keep female and male separate
(2) Put large figures on plate first, then fill with smaller figures
(3) Attempt to arrange from top left and end at bottom right
(4) Plate should be balanced and aesthetically pleasing
(5) Most important is to use the fewest plates possible
(6) Half plates are OK, just draw a blue pencil line to demarcate end of plate
(7) Play with plates until optimum arrangement is completed

D. Ink first plate

(1) Take all pencil drawings and arrange on first plate
(2) Tape down the one you want to ink; remove all other drawings; ink the figure
(3) Repeat until all drawings of first plate are completed
(4) Repeat for all plates

E. Reduce all figure plates

(1) PMT's
(2) Two-step photocopy reduction: reduce top of plate, then bottom of plate, tape together, and then reduce to final 8 1/2' x 11" for MS to be submitted. Type in figure number, scientific binomen, and sex of specimen at bottom of each reduced figure plate.

F. Label all figures

(1) Include scale bars near figures (must be unambiguous)
(2) Label figures with numbers or letters next to figures (must be unambiguous)
(3) Use scale bars and labels to fill large space gaps between figures. This balances the figure plate and makes it more aesthetic

X. Finish writing manuscript

A. Write figure legends

(1) Include scientific binomen, new species, and sex
(2) List appendages
(3) Explanation of symbols or abbreviations used in labels
(4) Measurement scales used in illustrations

B. Write acknowledgments

(1) Have running list for acknowledgments
(2) Mention names, institutional affiliations, and aid provided
(3) Acknowledgment of grants or special funding

XI. Deposition of type-specimens to museum

A. Properly label holotype, allotype, paratypes
B. Include locality, depth, collector, date, name, author, etc.
C. Use label paper and permanent ink
D. Vial within a vial method for storage using cotton plugs
E. Properly pack for shipping
F. Include cover letter to museum curator

XII. Format entire manuscript for specific journal

A. Photocopy "Notes to Contributors" section on back cover of appropriate issue
B. Read carefully; hi-lite important points
C. Is a title page required?
D. Address of author(s) on title page or end of MS
E. Follow format of published papers in the journal

F. Pay particular attention to literature citation section. Are journal names spelled out in full? Also, follow punctuation in citations precisely
G. Include museum catalog numbers for holotype, allotype, and paratypes in material examined section

XIII. External review

A. Often times, when I need some peer-feedback before official submission to a journal, I will send the final manuscript to several colleagues. Remember to send them a draft you consider to be final; they should not have to rewrite major portions of the MS for you.
B. Review all comments and make <u>necessary</u> corrections. Remember: you have the final decision; after all it is your paper.

XIV. Review entire manuscript

A. Check figures, figure labels, scale bars, symbols
B. Check entire figure legend and cross compare with figure plate
C. Check text citation of figures
D. Carefully check text for typos, punctuation, spelling, etc.
E. Check numbers of specimens add up to total reported
F. Remember to number all your pages, except the first page which is usually counted, but not numbered.

XV. Submission to journal

A. Write cover letter to editor and include the following:

(1) Title of manuscript
(2) Complete authorship (names of coauthors)
(3) Ability or inability to pay for page charges. There are several international journals that do not have page charges and a few domestic journals that will waive them (see "Notes to Contributors")
(4) Send appropriate number of photocopies (see "Notes to Contributors"). Remember to keep one for yourself.

B. Many authors keep the original figure plates until the manuscript has been officially accepted for publication ("In Press"). This has several advantages:

(1) The author can make corrections on it if reviewers request changes.
(2) If paper isn't accepted for publication, cost of mailing isn't wasted.
(3) Author safely keeps plates until editor actually needs them, thus reducing chances of the editor loosing the plates
(4) Remember - Whatever you do inform the editor in the

cover letter.

XVI. Study reviewer's comments

A. Most journals have 3 outside peer-reviewers
B. Reviewers fill-out a form with general comments and write directly on MS with detailed comments.
C. Make only those changes that you think improve the MS.
D. Address all comments and suggestions.
E. Send back revised MS with cover letter explaining to the editor which changes were not made to the MS and your reasons. Remember that there is an editorial prerogative.

XVII. Carefully examine proofs

A. Write in museum catalog numbers if you haven't already done so.
B. Read each syllable of each word in text. Some authors examine proofs backwards from right to left, end to beginning. Do not make any extensive changes in proofs; it is much too costly. Take time to carefully examine proofs.
C. Check all figures, figure numbers, figure legends.
D. Cross compare MS to proofs.
E. Use appropriate (accepted) editoral correction marks on proofs. Journals often send a sheet with editorial marks that should be used. CBE Style Manual can be used.
F. Send back proofs to editor with cover letter as soon as possible (within a few days, not weeks). You could be holding up the entire issue if you delay.

XVIII. Prepare permanent slides of dissected specimens

XIX. Reprints

A. Reprints are usually sent to the authors 1-3 months after paper comes out in print in journal.
B. Some journals provide 50-100 free reprints; most charge authors. See "Notes to Contributors".
C. Send reprints to appropriate people and certainly to anyone in the acknowledgnments.

RESEARCH SEMINARS

NATURAL HISTORY MUSEUM OF LOS ANGELES COUNTY

Fall 1992 Schedule

17 September	***Sarah George** - NHMLAC.* *Systematics of red-toothed shrews: Are different genera evolving at varying rates?*
24 September	***Julian Donahue** - NHMLAC* *The search for little gray moths in California.*
1 October	***John Heyning** -NHMLAC* *Systematics and ecology of common dolphins: Evidence for two species.*
8 October	***Scott France** - Scripps Institute of Oceanography* *Gene flow among isolated populations of deep-sea scavenging amphipods.*
*14 October**	***R. G. Wear** - Victoria University of Wellington.* *Determination of biomass in unfished subtidal surf clam populations along exposed sandy coastlines of New Zealand.*
22 October	***Charles Marshall** - UCLA* *Integrating paleontological, morphological, and molecular data in understanding evolutionary relationships.*
29 October	***David Rickman and Louise Coffey-Webb** - NHMLAC* *One hundred years of Hispanic Californian costume.*
5 November	***Robert Lavenberg** - NHMLAC* *Is megamouth (Megachasma pelagios) an alien from the depths?*
12 November	***John Stephens** - Occidental College* *The importance of long-term studies in interpreting environmental effects upon marine fishes.*
19 November	***Annalisa Berta** - San Diego State University* *Beyond the cladogram: The evolution of pinniped locomotory and feeding patterns.*
3 December	***Margaret McFall-Ngai** - U.S.C.* *Calamari enlightened: Bacterial bioluminescence in sepioid squids.*

Seminars begin at 3:00 P.M. in the Times-Mirror Room
** Wednesday seminar*

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

October, 1992 Vol. 11, No. 6

NEXT MEETING:	Amphipod Workshop
GUEST SPEAKERS:	Dr. E. L. Bousfield of the Royal British Columbia Museum, Victoria, British Columbia, Canada
	Dr. Craig P. Staude of the Friday Harbor Laboratories, University of Washington, Friday Harbor, WA
	Dr. Jodi Martin of the Los Angeles Museum of Natural History, Los Angeles, CA
DATE:	November 16 & 17, 1992 (**note third Monday & Tuesday**)
	9:30am - 3:00pm
LOCATION:	Times Mirror Room Los Angeles Museum of Natural History Los Angeles, California

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NOVEMBER 16 & 17 AMPHIPOD WORKSHOP:

The first morning, Dr. Bousfield will present the talk he gave at the J. Laurens Barnard Memorial Service entitled "Impact of J. L. Barnard, past, present, and future on North American Pacific Amphipod Research". The next morning, he will provide a preview of his forthcoming illustrated guide to amphipods of the North American Pacific Coast, Alaska to California, coauthored with Dr. Craig Staude. Dr. Staude will lead the examination of specimens in the afternoon. Dr. Jodi Martin, Los Angeles County Museum of Natural History, will talk about a new amphipod, (*Halice*), from a deep-sea hydrothermal vent on the Eastern Pacific Rise. He will have preserved specimens and video footage of the vent habitat. Included in the newsletter is a letter from Carol Paquette, MBC, informing SCAMIT that the Chinese amphipod species *Corophium heteroceratum* has invaded Long Beach and Los Angeles Harbors. If anyone has this amphipod, please bring it to the meeting. Please bring your problem amphipods and associated literature to the meeting. Drs. Bousfield and Staude will be staying at the University Hilton on Figuero St. Larry Lovell has reserved two extra rooms for SCAMIT members at the University Hilton for $75 a night (double). If anyone is interested in staying overnight please contact Larry at (619) 945-1608.

MINUTES FROM MEETING ON OCTOBER 19:

SCAMIT will tentatively subcontract with Southern California Coastal Water Research Project (SCCWRP) in the production of a master species list of benthic infauna of the Southern California Shelf. Ron Velarde suggested that SCAMIT form a committee and proposed that one representative from each of the four major dischargers be on that committee. This committee will then meet with SCCWRP to create a more specific proposal to get approved by the U.S. EPA.

Ron Velarde announced papers of interest to members:

Boland, John J. 1992. Enticing the Colossus. John Hopkins Magazine. June: 43-45.

Cosel, Rudo Von 1992. "*Solen rosaceus*" - three species. The Veliger. 35(4): 366-80.

Simmons, John E., 1991. Conservation Problems of Fluid-Preserved Collections. In Nat. Hist. Mus(s):Directions for Growth, Paisely S. Cato and Clyde Jones, Eds. Texas Tech Univ. Press, Lubbock. pp. iv-252.

If anyone is interested in the John Simmons article please contact Diane O'Donohue at:

City of San Diego
Marine Biology Laboratory
4077 N. Harbor Dr. M.S.-45A
San Diego, Ca 92101
tel. (619) 692-4901

It was also announced that the Water Environment Federation's 66th Annual Conference and Exposition will be held at the Anaheim Convention Center, Anaheim, Ca., on October 3-7, 1993. Included in the newsletter is a list of topics and an address for submitting abstracts.

Don Cadien of the Los Angeles County Sanitation District talked with Dr. Jim Thomas and was informed that Dr. Barnard's former crustacean position at the Smithsonian Museum is still open. It is hoped that this will come to a resolve and the position filled soon.

Don't forget the SCAMIT Christmas party scheduled for Saturday evening, December 5th from 6:00 to 9:00 pm at the Cabrillo Marine Museum. The party is potluck, Italian, style. If you would like to help or have any questions call Larry Lovell at (619) 945-1608. The museum will be open for SCAMIT members and families. Don't forget Santa will be there too!

Cumacean Workshop: Tony Phillips, Hyperion Treatment Plant, chaired the meeting on Diastylidae. Tony began the meeting by stating that Dr. Les Watling has described 12 new species and is working on another 7 within the family. Many of these species are SCAMIT provisionals. These species will be published in the MMS/Santa Maria Taxonomic Atlas. Due to delays, Tony will present a key on Diastylids and vouchers in the next newsletter. At the meeting he circulated a copy of the Cumacean Newsletter. If anyone is interested in subscribing to the newsletter write:

Invertebrate Zoology Section
Gulf Coast Research Lab.
PO Box 7000
Ocean Springs, Mississippi 39564-7000
USA
tel (601) 374-5552 FAX (601) 374-5559

He also circulated an informative book entitled:

Crustaceorum Catalogus
editus a
H. E. Gruner et L.B. Holthuis
Pars 8
Mihai Bacescu Cumacea II
SPB Academic Publishing 1992
(Fam. Nannastacidae, Diastylidae, Pseudocumatidae,
Gynodiastylidae et Ceratocumatidae)

FUTURE MEETINGS:

The December 14 meeting will include discussions of Polycirrinae Terebellid Polychaetes by Leslie Harris of the Los Angeles County Museum of Natural History, and a talk with slides entitled "Blue Water Plankton" by Dr. Bill Hamner of the University of California, Los Angeles. The meeting will be held at the Allan Hancock Foundation Room B-55, University of Southern California, Los Angeles, Ca.

The meeting on Anthurid Isopods with Dr. Rick Brusca of the San Diego Natural History Museum and Don Cadien of the Los Angeles County Sanitation District originally planned for January has been postponed due to scheduling conflicts with a museum collecting expedition. It has been rescheduled for June, 1993. Instead, January 11, 1993 will be devoted on working on the master species list for SCCWRP and listing and resolving what to do with SCAMIT duplicate literature. It will be held at the Cabrillo Marine Museum, San Pedro, California.

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4901
Treasurer	Ann Dalkey	(310)648-5611

27 October 1992

MBC

Ron Velarde
Marine Biology Laboratory
City of San Diego Water Utilities Department
Metro Wastewater Division
4077 N. Harbor Drive
San Diego, California 92101

Dear Ron:

The following information on a species of amphipod recently introduced into harbors in southern California may be of interest to SCAMIT members. John Chapman replied quickly to my letter to him requesting information, so I will be sending him a thank-you note and some specimens soon. He also sent me two reprints: his 1988 paper Invasions of the Northeast Pacific by Asian and Atlantic Gammaridean Amphipod Crustaceans, including a New Species of *Corophium*, J. Crustacean Biology, 8(3):364-382; and Chapman and J. T. Carlton's 1991 paper A Test of Criteria for Introduced Species: the Global Invasion by the Isopod *Synidotea laevidorsalis* (Miers, 1881), J. Crustacean Biology, 11(3):386-400. I can make a limited number of copies of either of these two.

SCAMIT members may be interested in knowing that the Chinese amphipod species *Corophium heteroceratum* has invaded Long Beach and Los Angeles Harbors. I recently wrote to John Chapman at the Hatfield Marine Science Center in Newport, Oregon, concerning what I suspected was this species in samples collected from Long Beach Harbor since 1990 and from Los Angeles Harbor in 1991. He confirmed that *C. heteroceratum* has invaded the West Coast, having been found in San Francisco Bay, occasionally in very dense concentrations. Faith Cole has been working on illustrating this species. The original description is in S. C. Yu's 1938 paper on two species of *Corophium* from Tangku, China. *C. heteroceratum* is a large species and can be distinguished from all other known *Corophium* species by the dorso-medial tooth on the first article of the male antenna 1 and by the sharp edge of the anterior end of article 4 of the male antenna 2 (it belongs to the group of *Corophium* with slender, non-geniculate mandibular palp).

Another introduced species of *Corophium*, *C. alienensis*, whose origin is unknown, and *Ampelisca abdita* from the East Coast have also been found in San Francisco Bay (*A. abdita* has also been found in nearby Tomales Bay and Bolinas Lagoon). (Note: *A. abdita* was erroneously recorded as *Photis californica* in the SERL [Sanitary Engineering Research Laboratory, University of California] surveys of San Francisco Bay in 1961 and 1962.) So far, these species have not been recorded from southern California, but we should be on the lookout for them. I would like to hear about occurrences in southern California other than in Long Beach/Los Angeles Harbors.

I hope that this is in a useable form for the newsletter. Let me know if you have questions on any points which may be pertinent but I didn't cover.

Cordially,

MBC Applied Environmental Sciences

Carol

Carol L. Paquette, Project Scientist

CLP/vw

CALL FOR ABSTRACTS

The Water Environment Federation (WEF) Program Committee is soliciting abstracts for the Surface Water Quality and Ecology Symposium and related sessions "Coastal Water Quality Issues" and "Environmental Monitoring & Assessment" for the 1993 Water Environment Federation Annual Conference in Anaheim, California, October 2-7, 1993.

Individuals are encouraged to submit abstracts to address this important and expanding focus of the Federation. Papers covering the following topics are especially encouraged:

- Urban & Agricultural Nonpoint Source Impacts and Controls
- Waste Disposal Effects on Estuaries and Coastal Areas
- Nutrient Problems and Eutrophication
- Ecological Risk Assessment
- Water Quality Impacts of Air Emissions
- Stormwater Impacts
- River and Lake Management
- Water Quality Monitoring
- Water Quality Modeling
- Fate & Transport Modeling of Toxics
- Toxicity Reduction Evaluations
- Sediment Quality Criteria
- Evaluation of Cumulative Impacts
- Regional Planning
- Criteria and Standards for Water Quality
- Freshwater & Marine Water Quality and Ecosystem Issues
- Bioassessment and Rapid Bioassessment Protocols
- Biocriteria

The deadline for submission of abstracts is **January 8, 1993**. Authors will be notified of tentative selection of abstracts by May 1; final acceptance of papers is contingent on submission of a **full manuscript** of the selected abstract by July 15, 1993.

Submit abstracts to :

Water Environment Federation
Attn: Maureen Novotne
601 Wythe Street
Alexandria, VA 22314-1994

For additional information and submittal forms, call Maureen Novotne, WEF Technical & Educational Services, at (703)684-2400, x7450.

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

November, 1992 Vol. 11, No. 7

NEXT MEETING: Polycirrinae Polychaetes and Blue Water Plankton

GUEST SPEAKER: Leslie Harris of the Los Angeles County Museum of Natural History, Los Angeles, CA

Dr. Bill Hamner of the University of California, Los Angeles, CA

DATE: December 14, 1992
9:30 am - 3:00 pm

LOCATION: Allan Hancock Foundation Building, Rm B-55
University of So. California, Los Angeles, CA

DECEMBER 14 MEETING

The meeting will include discussions of Polycirrinae Terebellid Polychaetes by Leslie Harris of the Los Angeles County Museum of Natural History, and a talk with slides entitled " Blue Water Plankton" by Dr. Bill Hamner of the Universty of California, Los Angeles, CA

Dr. Hamner's talk will begin at 10:00 am. Leslie Harris will follow at approximately 11:00 am. Please bring any problem Polycirrinae specimens and associated literature to the meeting.

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THE ARCO FOUNDATION, CHEVRON USA,
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SCAMIT Newsletter is not deemed to be a valid publication for formal taxonomic purposes.

MINUTES FROM MEETING ON NOVEMBER 16&17

Ron Velarde announced that Dr. Jim Thomas has accepted the crustacean position at the Smithsonian Museum. Dr. Thomas expressed his gratitude for all of the support he has received.

Don Cadien of the Los Angeles County Sanitation District informed SCAMIT members that *Tellina* sp A (Ljubenkov), presented at the July meeting, has been occurring in deeper water(>150m) and *T. carpenteri* in shallower water(60-150m). Please report any findings to John Ljubenkov at MEC Analytical Systems, Carlsbad, CA.

Hans Kuck, Los Angeles County Museum of Natural History, provided attending SCAMIT members with a list of material in the LCMNH Crustacea Reference Library: Amphipoda and a list of publications of J. Laurens Barnard. Both lists have been included in this newsletter. If anyone is interested in any of the articles on either list please contact Hans.

SCAMIT Officers Elections

Nominations are now open for SCAMIT officers for the 1993-94 year. Nominations will be entertained from now, up to and including the January meeting. Send your nominations to the Vice President, Larry Lovell. Ballots will be mailed out with the January newsletter and will be due by the March meeting.

1993-94 Schedule

Larry Lovell is looking for input on possible speakers and subjects for the next year. He would appreciate any input you might have. You can write him at:

Larry Lovell
1036 Buena Vista
Vista, CA 92083

Don't forget the SCAMIT Christmas party scheduled for Saturday evening, December 5th from 6:00 to 9:00 pm at the Cabrillo Marine Museum. The party is potluck, Italian style. The Olive Garden Restaurant will supply SCAMIT with unlimited salad and breadsticks. Larry suggested that one person from each lab be in charge of the number of people and kids planning to attend and what dish they are bringing. If you have any questions call Larry Lovell at (619) 945-1608. The museum will be open for SCAMIT members and families. John-Claus will be there too! We will be setting up tables and chairs at 5 pm. Please come and help if you can.

Amphipoda Workshop

The first morning Dr. E. L. Bousfield discussed the general background, phyletic classification, and principle characters of amphipods. Drs. Bousefield and Les Watling believe that Mysidadcea is the sister group to Amphipoda based on external and internal morphology. Dr. Bousfield has split the amphipods into Natantia(free swimming) and Reptandia(crawlers) groups. He then reviewed the reproductive traits and evolutionary trends for both groups. He proposed that this classification still needs futher refinement and study. Dr. Bousfield finished his talk with some slides of amphipoda species from southern California to Alaska. In the afternoon Dr. Craig Staude examined specimens which were brought by members to the meeting.

The second morning, Dr. Bousfield presented the talk he gave at the J. Laurens Barnard Memorial Service entitled "Impact of J. L. Barnard, Past, Present, and Future on North American Pacific Amphipod Research". Dr. Staude then discussed the proposed illustrated guide to amphipods of the North American Pacific Coast, Alaska to California. The guide book will be based on collections from 1955 to present. The format of the book will be the same as the New England guide

book, except that the descriptions and illustrations will be facing each other. It will be supplemented with keys having 2-3 characters per couplet. So far, there are 650 plates completed including 5 color plates. The Super Families and Families are presented in a phyletic classification and a pragmatic classification is used for the Genera and Species. It is hoped that whale parasites and hosts will be included. After discussing the guide book Dr. Staude reviewed his Ph.D. Dissertation on *Paramoera*. There are nine species on our coast, Alaska to Baja CA. Included in the newsletter is a key from his Ph.D. Dissertation, Systematics and Behavioral Ecology of the Amphipod Genus *Paramoera* Miers (Gammaridea: Eusiroidea: Pontogeneiidae) in the Eastern North Pacific. The species names and descriptions are in preparation. These manuscript names should not be used until published.

In the afternoon Dr. Jodi Martin, Los Angeles County Museum of Natural History, presented a new species of *Halice* found at the Venture hydrothermal fields along the East Pacific Rise. He showed a video taken on one of *Alvin*'s dives displaying a swarm of these amphipods. He also showed SEM photos, which revealed that the amphipod is covered with scales and sensory setae. If anyone is interested in more information there is an article in Nature Vol. 358, 2 July 1992.

FUTURE MEETINGS

The Anthurid Isopod meeting originally planned for January has been postponed to June. The meeting on January 11, 1992 will again address the master species list of the southern California benthos. We will break up into small groups to address the list phyletically. A list will be compiled of duplicate literature possessed by SCAMIT and a decision will be made on what to do with it. The meeting will be held at the Cabrillo Marine Museum, San Pedro, California.

The February 8, 1993 meeting will be on Brachiopods with Dr. Eric Hochberg and Bivalve Molluscs with Paul Scott of the Santa Barbara Museum of Natural History. It will be held at the Santa Barbara Museum of Natural History. Directions to the museum and information about nearby hotels will be included in the next newsletter.

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4901
Treasurer	Ann Dalkey	(310)648-5611

From: Staude, C. P. 1986. Systematics and Behavioral Ecology of the Amphipod Genus Paramoera Miers (Gammaridea: Eusiroidea: Pontogeneiidae) in the Eastern North Pacific. Ph.D. Dissertation, University of Washington, Seattle, 325 pp.

APPENDIX A

Key to pontogeneiid genera occurring on Washington gravel beaches

1. Rostrum vestigial; gnathopods with posterior setae arranged in comblike clusters; telson with apical spines or setae

Paramoera

Rostrum produced, although somewhat obscured by the first antennae; gnathopods with setae in poorly aligned clusters; telson without apical spines or setae 2

2. Eye black (in alcohol); antenna 1 with an articulate 1-segmented accessory flagellum; posterior margin of coxae 1-3 with distinct spines; inner ramus of uropod 2 longer than the peduncle

Accedomoera

Eye brown or black (in alcohol); without an articulated accessory flagellum, but with a platelike extension of the distomedial margin of segment 3 of antenna 1; posterior margin of coxae 1-3 with spines vestigial or absent; inner ramus of uropod 2 not longer than the peduncle Pontogeneia

From: Staude, C. P. 1986. Systematics and Behavioral Ecology of the Amphipod Genus Paramoera Miers (Gammaridea: Eusiroidea: Pontogeneiidae) in the Eastern North Pacific. Ph.D. Dissertation. University of Washington, Seattle, 325 pp.

Key to subadult Paramoera occurring on Washington gravel beaches

1. Peduncle of antenna 1 with many long setae (these reduced in mature males); gland cone with at least 1 long seta; uropod 3 with plumose setae 2

   Peduncle of antenna 1 with short setae or with a few long setae; gland cone without long setae; uropod 3 without plumose setae 5

2. Urosome with 1 or 2 distinct dorsal bosses; subapical spine of inner ramus of uropods 1 and 2 enlarged; outer ramus of uropod 2 distinctly shorter than the inner ramus; apical setae of telson short 3

   Dorsal margins of urosomites straight or slightly convex; subapical spine of inner ramus of uropods 1 and 2 not enlarged; outer ramus of uropod 2 subequal to or longer than inner ramus; apical setae of telson long 4

3. Inferior antennal sinus with a deep narrow cleft; posterior margin of segment 2 of peraeopods 5-7 with deep acute notches (becoming more distinct with maturity); distal peduncular spine of uropod 2 nearly 3 times as large as the proximal spines

   Paramoera serrata n. sp.*

   Posterior antennal sinus with a shallow wide cleft; posterior margin of segment 2 of peraeopods 5-7 with shallow right-angled notches; distal peduncular spine of uropod 2 not more than twice

*formal names and description in preparation

as long as the proximal spines

P. mohri J.L. Barnard, 1952

4. Segment 1 of antenna 1 with a small spine at the distoventral corner; segment 3 of antenna 2 with a small spine at the distodorsal corner in addition to distoventral spines; posterior margin of segment 6 of peraeopods 3 and 4 with some spines in pairs; uropod 2 with outer ramus slightly shorter than the inner ramus; rami of uropod 3 of subequal length

P. columbiana Bousfield, 1958

Segment 1 of antenna 1 without spines; segment 3 of antenna 2 with small spines only at the distoventral corner; posterior margin of peraeopods 3 and 4 with only single spines; uropod 2 with outer ramus distinctly longer than inner ramus; inner ramus of uropod 3 shorter than outer ramus (lengthening with maturity)

P. suchaneki n. sp.*

5. Eye moderate to large; gland cone with a single short seta; segment 5 of gnathopod 2 not shorter than segment 6; telson with a single moderate seta near the apex of each lobe

P. bousfieldi n. sp.*

Eye small; gland cone with 1-2 crooked spines; segment 5 of gnathopod 2 shorter than segment 6; telson with several long apical setae *P.* (*Rhithromoera*) *bucki* n. sp.*

*formal names and descriptions in preparation

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214IP. Amatiguakius forsberghi, New Genus, New Species, from Alaska (Marine Amphipoda, Epimeriidae). Proceedings of Biological Society of Washington. Ch. Oliver Coleman and J.L. Barnard

215IP. Redescription of Two Species of Pseudiphimediella from the Southern Ocean (Amphipoda, Iphimediidae) Proceedings of Biological Society of Washington. Ch. Oliver Coleman and J.L. Barnard

216IP. A new species of Jerbarnia from the Barrier Reef. Beaufortia

217IP. Redescription of Maxilliphimedia longipes (Walker, 1906) (Crustacea: Amphipoda: Iphimediidae) from the Antarctic Peninsula. Memoirs of the Museum of Victoria. Charles Oliver Coleman[1] J. L. Barnard[2]

218IP. Redescription of Two Species of Pariphimedia, an Amphipod Genus (Crustacea, Iphimediidae) from the Antarctic Ocean. Invertebrate Taxon. Charles Oliver Coleman and J. L. Barnard.

219IP. Kamaka taditadi, A New Marine Species from Papua New Guinea (Crustacea, Amphipoda, Corophioidea). James Darwin Thomas and J.L. Barnard

220IP. Guernea ipilya, and G. yamminye, New Species, from the Australian Barrier Reef (Crustacea, Amphipoda, Dexaminidae). James Darwin Thomas and J.L. Barnard.

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202IP. The Paracalliopiidae of Australia (Amphipoda:Crustacea). Proceedings of the Royal Society of Victoria, xxx:xxx-xxx, xx figures. With M.M. Drummond (junior author). 198x.

211IP. Podocerus K, new from Channels in Florida Keys. Proceedings of Biological Society of Washington

221IP. Moolapheonoides utmas, new species, from Coral Reefs of Papua New Guinea (Amphipoda, Cyproideidae).

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203IP. The freshwater Amphipoda of Australia, part 2, with W.D. Williams.

207IP. Dhazia mayi, a New Genus and Species of Hadziid Amphipod from the Deep Tasman Sea, and Andrazia, New Genus, [illegible] Andres.

222IP. Cladistic analysis of Phoxocephaloidea and Haustorioidea (Crustacea, Amphipoda). Smithsonian Contributions to Zoology, xxx: xxx-xxx, xxx figures. By Gloria Alonso, J.L. Barnard, and M. Mickevitch.

223IP. Laphystiopsidae (Amphipoda) from Australia, China Sea, and xxxx

225IP. Maxillipius from Madang, New Guinea (Senior author, J.D. Thomas).

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

December, 1992 Vol. 11, No. 8

NEXT MEETING: Discussion on Master Species List and Duplicate Literature

GUEST SPEAKER: None

DATE: January 11, 1993
9:30 am - 3:00 pm

LOCATION: Cabrillo Marine Museum, San Pedro, California

JANUARY 11 MEETING

The meeting will again address the master species list of the southern California benthos. We will break up into smaller groups to address the list phyletically. Each group will review the list for synonyms, spelling, and accuracy in reporting.

Time permitting, a list will be compiled of duplicate literature possessed by SCAMIT and a decision will be made on what to do with it.

Please bring any material or literature deemed necessary.

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SCAMIT Newsletter is not deemed to be a valid publication for formal taxonomic purposes.

MINUTES FROM MEETING ON DECEMBER 14

The Christmas party was a big success and fun was had by all. Thanks to Larry Lovell for organizing the party and to all of the people who attended. SCAMIT would also like to thank Ed Maestro of the Cabrillo Marine Museum.

SCAMIT Officers Elections

Nominations are now open for SCAMIT officers for the 1993-94 year. Nominations will be entertained from now, up to and including the January meeting. Send your nominations to the Vice President, Larry Lovell. Ballots will be mailed out with the January newsletter and will be due by the March meeting.

1993-94 Schedule

Larry Lovell is looking for input on possible speakers and subjects for the next year. He would appreciate any input you might have. You can write him at:

Larry Lovell
1036 Buena Vista
Vista, CA 92083

Blue Water Plankton

Dr. Bill Hamner, University of California, Los Angeles, presented a very interesting talk and slide show on Blue Water Plankton. He discussed the many different species that have been discovered and observed using the blue water diving technique. The first discovery was that mucous is an important tool for feeding. The animals secrete external mucous, forming a web, which catches particulates floating in the water column. Another discovery was that whenever the animal's feeding filter becomes clogged they discharge and secrete a new filter. This discharge of material may make up the clumps of marine snow that collect at the bottom of the ocean.

Polycirrinae Workshop

Leslie Harris of the Natural History Museum of Los Angeles County chaired the workshop on Polycirrinae polychaetes. She informed the attending SCAMIT members that there are only three species commonly occurring in soft bottom on the California shelf. The three species are *Amaeana occidentalis, Polycirrus californicus,* and *Polycirrus* sp. I (Banse,1980). Included in this newsletter is a key to the genera of Polycirrinae and generic definitions from Hutchings and Glasby 1986. Also included is a key to the Northeast Pacific *Polycirrus* from Banse 1980 and specific characters used by Hutchings and Glasby 1986.

FUTURE MEETINGS

The February 8, 1993 meeting will be on Brachiopods with Dr. Eric Hochberg and Bivalve Molluscs with Paul Scott of the Santa BarbaraMuseum of Natural History. It will be held at the Santa Barbara Museum of Natural History. The Bivalve groups that will be treated are Tellindae- (potential new species of *Tellina* sp. A of Ljubenkov), Thraciidae- (identifying juvenile specimens of all members in family and deciding correct identification of *Cyathodonta*), Thyasiridae- (identifying all *Thyasira* and checking id on *"Tomburchus" redondoensis*), and specimens that are not *Solemya reidi.* Please bring specimens to the meeting. Paul Scott asked for specimens of *Tellina* to be sent in advance to the Santa Barbara Museum of Natural History tel. (805) 682-4711, ext. 319. Please bring all species of Brachiopoda that have been collected. Paul has arranged for motel accomodations. A special rate ($60/night) has been provided for February 7-8 at:

Colonial Inn
206 Castillio St.
Santa Barbara, CA 93103
(805) 963-4317 ask for Carmela or John

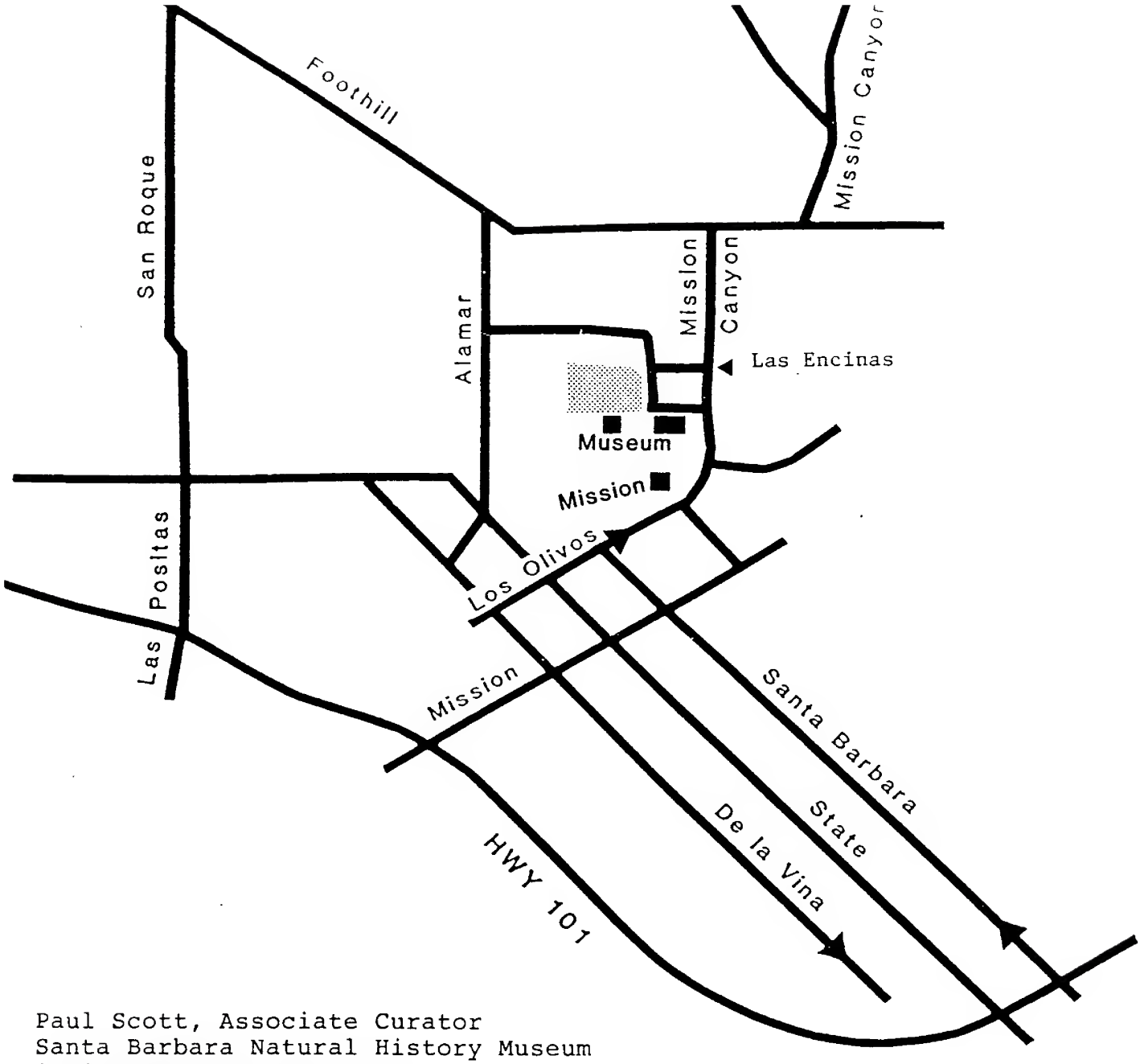
Reservations are required and be sure to mention you are attending the Natural History Museum workshop. The motel is located near the beach (take Bath St. exit off 101 Northbound and turn left at end of offramp). Directions to the museum are included in this newsletter.

The meeting on March 8, 1993 will be on Sabellid Polychaetes II with Dr. Kirk Fitzhugh of the Los Angeles County Museum of Natural History. Kirk will emphasize the Subfamily Sabellinae (*Demonax, Sabella, Megalomma, Pseduopotamilla* etc). So start collecting specimens now. The meeting will be held at the Allan Hancock Foundation Building, University of Southern California, Los Angeles, CA.

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4901
Treasurer	Ann Dalkey	(310)648-5611



Paul Scott, Associate Curator
Santa Barbara Natural History Museum
2559 Puesta Del Sol Road
Santa Barbara, CA
(805) 682-4711

Directions from the south to the Santa Barbara Museum

1) Proceed north on US 101 to Santa Barbara, turn right at the first signal (Santa Barbara St.).

2) Proceed up Santa Barbara St. about 3 miles, turn right on Los Olivos.

3) Go past the Mission, bear left at the "Y", proceed about half a mile.

4) Turn left on Las Encinas, turn left on Puesta del Sol, turn right into Museum parking lot.

5) Invertebrate Zoology is on the west side of the new Collection and Research Center (past the whale, west side of parking lot).

Southern California Polycirrinae

Compiled by Leslie H. Harris, Collections Manager
Invertebrate Zoology Section
Los Angeles County Museum of Natural History
900 Exposition Boulevard
Los Angeles, California 90007

POLYCIRRINAE Malmgren, 1866 (modified from Holthe, 1986a)

Tentacular lobe conspicuous, simple or lobed. Often 2 types of tentacles present. No dorsal branchiae, secondary notopodial branchiae sometimes present. No eyespots. No lateral lobes on the anterior segments. Ventral shields paired, unpaired or reduced. Notosetae, if present, smooth or denticulate. Uncini, if present, breviavicular, brevipectinate, or acicular, always in single rows.

Tribe Polycirrini
: Notosetae present or absent. Uncini breviavicular or brevipectinate. *Polycirrus, Biremis.*

Tribe Amaeanini
: Notosetae present. Uncini manubriavicular or acicular, limited to abdomen. *Amaeana.*

Tribe Lysillini
: Notosetae present or absent. Uncini absent. *Lysilla, Hauchiella.*

Uncertain tribal affinity: *Enoplobranchus.*

Key to Polycirrinae Genera (from Hutchings & Glasby, 1986)

1.	Setae absent in all segments	*Hauchiella*
	Setae present in at least some segments	2
2.	Uncini absent in all setigers	3
	Uncini present in at least some setigers	4
3.	Thoracic notopodia vascularised, some branched	*Enoplobranchus*
	Thoracic notopodia never branched	*Lysilla*
4.	Uncini short handled, present in thorax and abdomen	*Polycirrus*
	Uncini long handled spines, present in abdomen only	*Amaeana*

West Coast Polycirrinae (*sensu* Hutchings & Glasby,1986 and Holthe, 1986b)

Amaeana Hartman, 1959

Amaea Malmgren, 1866

Type species: *Polycirrus trilobatus* Sars, 1863; designated by Malmgren (1866).

Upper lip not folded, lower lip cushion-like. Tentacular membrane trilobed. Branchiae absent. Ventral shields unpaired, well developed. Notosetae from segment 3, smooth, finely denticulate or plumose. Nine (or 10) to 13 thoracic segments. Thoracic uncini absent. Abdominal uncini long shafted, acicular.

Hauchiella Levinsen, 1893

Type species: *Polycirrus tribullatus* McIntosh, 1869; by monotypy.

Upper lip folded, lower lip inconspicuous. Shape of body typical of subfamily, except that all notopodia, neuropodia, and setae are lacking. No branchiae. Tentacular membrane expanded, with 2 types of tentacles. Thorax of about 10 segments, usually about 70 segments in total. A number of more or less unpaired ventral shields.

Lysilla Malmgren, 1866

Type species: *Lysilla loveni* Malmgren, 1866; by monotypy

Upper lip folded, lower lip prominent, gutter-like. Branchiae absent. Expanded tentacular membrane, trilobed, with 2 types of buccal tentacles. No distinct ventral shields. Six to12 thoracic segments. Notopodia from segment 3; notosetae smooth, hirsute, or pinnate capillaries. Thoracic and abdominal uncini absent.

Polycirrus Grube, 1850

Aphlebina Quatrefages in Milne Edwards, 1844.
Torquea Leidy, 1855.
Apneuma Quatrefages, 1865.
Leucariste Malmgren, 1866.
Ereutho Malmgren, 1866.
Cyaxares Kinberg, 1866.
Dejoces Kinberg, 1867.
Anisocirrus Gravier, 1905.
Pseudoampharete Hartmann-Schröder, 1960.
Litancyra Hutchings, 1977.

Type species: *Polycirrus medusa* Grube, 1850.

Upper lip folded, lower lip more or less distinct. Expanded tentacular membrane trilobate, sometimes with lateral lobes reduced; with 2 types of buccal tentacles. Branchiae absent. One unpaired anterior and a number of paired ventral shields. Thorax with variable number of setigers (10-70, more or less specifically constant), notopodia beginning on segment 2 or 3. Notosetae variable, include pinnate, hirsute, smooth-winged or smooth wingless capillaries, but only 1 or 2 setal types present in a given species. Thoracic uncini first present from segments 7 to 18, or absent. Abdominal uncini always present. Uncini usually avicular, sometimes approaching pectinate form.

Specific Characters For *Polycirrus* Used by Hutchings & Glasby (1986)

1. Number of pairs of thoracic notopodia. Only gross differences are of diagnostic value since the absolute numbers of pairs decrease with increasing body size.

2. First segment the uncini occur on; necessary to give range for species. Number of uncini per row increase with increasing body size.

3. Degree of epidermal papillation or tesselation.

4. Degree of segmentation and approximate numbers of ventrolateral pads; may vary with increasing body size.

5. Form of notosetae.

6. Form of uncini, plus dental formula. Dentition is highly variable in some species, so dental formula should include range, or a number of frontal views of uncini should be provided.

Specific Characters Considered Unreliable by Hutchings & Glasby (1986)

1. Number of nephridia; varies with size and sexual maturity.

2. Form of notopodia and presence of lobes; highly variable and influenced by degree of expansion or contraction.

Key to Northeast Pacific *Polycirrus* Species (modified from Banse, 1980)

1 Notosetae plumose, sometimes also limbate. With 10-14 (rarely 15) pairs of notopodia . . . . . *Polycirrus* sp. I
Notosetae limbate (smooth under low magnification, variously ornamented under oil lens) 2

2 With 10-15 pairs of notopodia 3
With 20-25 (40) pairs of notopodia 5

3 Notosetae weakly serrate. Uncini with semicircle of large teeth above secondary tooth . . . . . *Polycirrus* sp. III
Notosetae with fine hairs 4

4 Uncini with 0-3 smaller teeth above secondary tooth . . . . . *Polycirrus* sp. II
Uncini with numerous small teeth above and lateral to secondary tooth . . . . . *Polycirrus* sp. V

5 Notopodia usually with conspicuous posterior lips. Uncinus with semicircle of small teeth above secondary tooth . . . . . *Polycirrus californicus*
Notopodia without conspicuous posterior lips. Uncini without teeth above 1 or 2 small teeth above principal tooth . . . . . *Polycirrus* sp. IV

Polycirrinae Species Occurring in Southern California

Amaeana occidentalis (Hartman, 1944). Type locality: Tomales Bay, California, intertidal. There are two forms. The first is a large worm found in shallow mudflats and bays, such as Elkhorn Slough, Tomales Bay & Mission Bay. The second form is much smaller and occurs in soft bottom shelf and slope areas through southern California. References: Hartman (1944, 1969), Banse (1980).

Hauchiella cf. *tribullata* McIntosh, 1869. Type locality: Scotland. Rare, taken deeper than 600 m. References: Holthe (1986b), Hutchings & Glasby (1986).

Lysilla cf. *loveni* Malmgren, 1866. Type locality: Sweden. Rare, taken deeper than 300 m. References: Banse (1980), Holthe (1986b).

Polycirrus californicus Moore, 1909. Type locality: San Diego, California. The most common polycirrin species found in southern California, in soft bottom sublittoral and shelf areas. Banse (1980) considered *Polycirrus perplexus* Moore, 1923 (type locality: Monterey Bay, California) to be a junior synonym after examination of holotypes. References: Moore (1909, 1923), Hartman (1969), Banse (1980).

Polycirrus sp. I Banse, 1980. Locality: British Columbia, Washington. The only other *Polycirrus* species found locally in sublittoral and shelf soft bottom areas; may co-occur with *P. californicus*. Reference: Banse (1980).

Polycirrus spp. Several different taxa have been found on rocky substrates and in sediments deeper than 600 m.

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The Allan Hancock Foundation Polychaete Collection of the Los Angeles County Museum of Natural History

Dr. Kirk Fitzhugh, Assistant Curator

Leslie H. Harris, Collections Manager

GUIDELINES FOR LOANS, DONATIONS, AND VISITORS

The Los Angeles County Museum of Natural History (LACM) polychaete section has put together the following guidelines to facilitate use of the collection by the scientific community. We want to encourage all our colleagues to deposit type and non-type specimens into our collection, as well as take advantage of the collection's vast holdings.

On 1 July 1988, the University of Southern California (USC) formally transferred legal ownership of the Allan Hancock Foundation (AHF) polychaete collection to the LACM. Specimens, original catalogs, files, and the late Dr. Olga Hartman's library on Polychaeta now belong to the LACM. As part of the transfer agreement, all specimens were accessioned as a unit, and loans that had been made before 1 July 1988 were re-opened through the LACM registrar's office and subject to museum regulations.

Since 1941, the collection has been housed in the AHF building on the USC campus, just across the street from the LACM. The LACM is now in the process of constructing new office and collection space within the museum for the polychaete staff and collection.

The LACM-AHF polychaete collection is the second largest of its kind in the United States (the USNM collection being the largest). We estimate the LACM-AHF polychaete collection to contain over 90,000 lots, and is most notable for four particular reasons. First, because of the far-reaching AHF expeditionary cruises, the collection represents the most extensive geographic coverage along the eastern Pacific, from intertidal to abyssal depths, allowing investigators to pursue such issues as intraspecific variation and biogeographic/temporal patterns. Our eastern Pacific specimens form the world's largest collection of worms from this region, most of which were identified by Drs. Olga Hartman and Kristian Fauchald. Second, there is excellent representation of taxa from other regions of the world, especially the Indian, Pacific, and Antarctic Oceans, giving the collection world-wide importance as an indispensable resource for monographic studies. Third, the collection holds the results of the most extensive quantitative environmental surveys from the past 40 years, conducted in a wide range of depths along Oregon, California, and

Mexico. And fourth, the type collection is renowned for its size and holdings, representing published works from 1885 to the present.

LOANS

We are happy to furnish colleagues with specimens for their research. There are certain regulations imposed by the museum which define the borrower's obligations and allow us to keep track of material at all times.

Types and other holdings are loaned at the discretion of the curator and collections manager, with each loan approved by the Chief Curator and Registrar. Material is loaned to institutions and organizations, at the request of qualified individuals. Specimens requested by students or associates require faculty or institutional endorsement and are the direct responsibility of that faculty member or institutional representative. Loans may not be transferred, either to another individual or location. If the borrower wishes to take material to another institution, the original loan must first be closed. Another loan will then be opened under the name and address of the new institution. Any labels associated with museum specimens may not be removed or altered. Permission is required for dissection, preparation for SEM, or other special procedures. Specimens must be properly maintained by the borrower and returned in the same condition as received. All taxonomic changes, especially of types, must be reported to the curator or collections manager when the material is returned. If the material is mentioned in a publication, proper acknowledgement must be made in the paper and the museum should be supplied with two copies. Loans of type or important material are sent by registered mail, insured mail, or hand-carried, and should be returned by one of these methods. Loans of extensive series of any one taxon are shipped in several containers, as appropriate. To prevent the loss of a whole type series, the holotype and paratypes of a species are never loaned to the same institution at one time, but may be borrowed sequentially. Loans are made for 6 months, but may be renewed. Periodic reminders are sent to individuals holding outstanding loans.

DEPOSITS

We welcome deposits of both type and general collection specimens. With a strong commitment by the LACM to support the polychaete section, we can assure researchers that their specimens will be well cared for in the years ahead. Also, material deposited into the collection is extensively utilized by both the large group of west coast polychaete taxonomists and scientists world-wide.

Acquisitions are made to augment the systematic and biogeographical strengths of the collection, and to provide a thorough basis for comparative studies of the class Polychaeta on a world-wide scale.

Researchers interested in depositing large collections should first contact either Kirk Fitzhugh or Leslie Harris before sending material. Small collections may be sent at any time. Address packages to Dr. Kirk Fitzhugh, Assistant Curator, Division of Life Sciences, Natural History Museum of Los Angeles County, 900 Exposition Blvd., Los Angeles, California 90007, or to Leslie Harris, Collections Manager, at the same address.

Specimens sent for deposit should be accompanied by a letter clearly stating that the specimens are a gift, with lots itemized. The material must be properly fixed, preserved, and labelled. Fixation in 4 to 10% seawater-formalin followed by preservation in 70% ethanol is preferred. Label paper should be 100% rag, with labelling typed or printed in water-proof black ink. Each label should include type designation (if necessary), taxonomic data, all available locality data, collection date, collector's name, method of collection, depth of collection, and any ecological data available. Typed station data listings may be sent with the specimens, but they should not take the place of adequate donor labels. Please see the attached sample LACM-AHF catalog entries for the kind of specimen information we prefer to receive for our archives.

Cataloging of the entire polychaete collection is scheduled to begin after we move to our new quarters in the LACM. Until then, donated general collection material will not receive LACM-AHF catalog numbers. This material should be identified in publications by putting "LACM-AHF" in parentheses after the station data for each lot. Only type material is currently assigned catalog numbers. Types deposited will be given numbers only if the description of the specimens is in press at the time of deposit. A letter should accompany the deposit of types, stating the title of the article and the name of the publication in which the paper will appear. We request that all donors send reprints of papers citing LACM-AHF material for our sectional library.

VISITORS

All qualified individuals are welcome to visit the LACM-AHF polychaete collection. Visits can be made for any reasonable amount of time, as long as curatorial staff are present. Please notify us several weeks in advance, as space is currently limited. Dissecting and compound microscopes are available. We regret that the museum is not able to offer any financial support to visitors at this time.

LACM example

```
LACM-AHF NO. 000000*    TAX CODE: *      PRES.          TYPE
ORIG. AHF OR HARTMAN NO.: donor's original lot #
GEN.                    SUBGEN.                  SP.
SUBSP.                  AUTHOR                          NO. SPEC.
OCEAN:                  COUNTRY:                 STATE:
DIV./ISLAND GRP. Geographic division or island group

SPEC. LOCAL.:specific locality

HABITAT: sediment type, associated fauna or algae, etc.

LAT/LONG
COLL. collector (individual and/or institution)          COLL. DATE
EXPEDITION: title of expedition or collection program
VESSEL:                          CRUISE NO.:          STA. NO.
DEPTH:                          GEAR:
DONOR individual or institution  DONOR DATE: *
CAT. DATE: *                     CAT. BY: *
REMARKS: Location of types. [Data fields marked by an asterisk (*) are filled
         in by the LACM collections manager.]
ORIGINAL REF.:*

ID BY:                           ID DATE:          ACC. NO. *
```

completed record

```
LACM-AHF NO. 000158     TAX CODE: ANT   PRES. ALC     TYPE HOLO
ORIG. AHF OR HARTMAN NO.: N11114
GEN. Antonbruunia       SUBGEN.                  SP. viridis
SUBSP.                  AUTHOR Hartman & Boss 1965       NO. SPEC. 1
OCEAN: Indian           COUNTRY: Madagascar      STATE:
DIV./ISLAND GRP. Mozambique Channel

SPEC. LOCAL.:northwest of Tulear

HABITAT: commensal in the mantle cavity of Lucina fosteri; sediments of black
         brown oozy mud & detritus
LAT/LONG 23 20' S, 43 36.3' E
COLL. O. Hartman & K.J. Boss                          COLL. DATE 12 Aug 1964
EXPEDITION: International Indian Ocean Expedition
VESSEL: R/V ANTON BRUUN          CRUISE NO.: 7        STA. NO. 364 C
DEPTH: 39-45 fm                  GEAR: Agassiz trawl
DONOR J. Ryther                  DONOR DATE:
CAT. DATE: 06 Sep 1991           CAT. BY: L.H. Harris
REMARKS: Paratypes: 000159,000162, also in paratype lots of Lucina fosteri
         Hartman & Boss 1965, LACM-AHF 000160-000161, and in USNM. Type species
ORIGINAL REF.:Hartman & Boss 1965, pp. 177-182, figs. 1-5.

ID BY: O. Hartman                ID DATE:          ACC. NO. A5486
```

LACM-AHF POLYCHAETE COLLECTION CATALOGUE RECORDS

The above examples show the type of collection data that should be sent along with specimens for deposition into our collection. We have found that museum records with detailed information are invaluable for future researchers. Certain information, such as LACM-AHF no., taxonomic code, catalogue date, donor date, etc., is provided by the LACM polychaete collections manager. The rest of the information should be supplied by the donor.

14 Dec 92 - Leslie handed this out as a reference for future type specimen deposit to AHF

LACM-AHF NO. 000332 TAX CODE: ONU PRES. ALC TYPE HOLO
ORIG. AHF OR HARTMAN NO.:
GEN. Diopatra SUBGEN. SP. farallonensis
SUBSP. AUTHOR Fauchald 1968 NO. SPEC. 1
OCEAN: N. Pacific COUNTRY: Mexico STATE:
DIV./ISLAND GRP. Gulf of California

SPEC. LOCAL.:head of Farallon submarine canyon

HABITAT: silty clay

LAT/LONG 25 29.3'N, 109 24.3' W, to 25 31.9' N, 109 25.2' W
COLL. R.H. Parker COLL. DATE 02 Apr 1959
EXPEDITION:
VESSEL: CRUISE NO.: STA. NO. P 54-59
DEPTH: 90 to 75 fm GEAR: shell dredge
DONOR DONOR DATE:
CAT. DATE: 28 Aug 1991 CAT. BY: K. Fitzhugh
REMARKS: Paratypes: 000333.

ORIGINAL REF.:Fauchald 1968, pp. 7-8, pl. 1, figs. H-N.

ID BY: K. Fauchald ID DATE: ACC. NO. A5486

LACM-AHF NO. 000333 TAX CODE: ONU PRES. ALC TYPE PARA
ORIG. AHF OR HARTMAN NO.:
GEN. Diopatra SUBGEN. SP. farallonensis
SUBSP. AUTHOR Fauchald 1968 NO. SPEC. 11
OCEAN: N. Pacific COUNTRY: Mexico STATE:
DIV./ISLAND GRP. Gulf of California

SPEC. LOCAL.:head of Farallon submarine canyon

HABITAT: silty clay

LAT/LONG 25 29.3'N, 109 24.3' W, to 25 31.9' N, 109 25.2' W
COLL. R.H. Parker COLL. DATE 02 Apr 1959
EXPEDITION:
VESSEL: CRUISE NO.: STA. NO. P 54-59
DEPTH: 90 to 75 fm GEAR: shell dredge
DONOR DONOR DATE:
CAT. DATE: 28 Aug 1991 CAT. BY: K. Fitzhugh
REMARKS: Holotype: 000332.

ORIGINAL REF.:Fauchald 1968, pp. 7-8, pl. 1, figs. H-N.

ID BY: K. Fauchald ID DATE: ACC. NO. A5486

LACM-AHF NO. 000334 TAX CODE: ONU PRES. ALC TYPE HOLO
ORIG. AHF OR HARTMAN NO.:
GEN. Diopatra SUBGEN. SP. papillata
SUBSP. AUTHOR Fauchald 1968 NO. SPEC. 1
OCEAN: N. Pacific COUNTRY: Mexico STATE: Baja California
DIV./ISLAND GRP. Gulf of California

SPEC. LOCAL.:

HABITAT: shelly sand

LAT/LONG 29 20.0' N, 113 00.2' W
COLL. R.H. Parker COLL. DATE 10 Apr 1959
EXPEDITION:
VESSEL: CRUISE NO.: STA. NO. P 71-59
DEPTH: 40 fm GEAR: shell dredge
DONOR DONOR DATE:
CAT. DATE: 28 Aug 1991 CAT. BY: K. Fitzhugh
REMARKS: Paratypes: 000335.

ORIGINAL REF.:Fauchald 1968, pp. 11-12, pl. 2, figs. D-I.

ID BY: K. Fauchald ID DATE: ACC. NO. A5486

LACM-AHF NO. 000335 TAX CODE: ONU PRES. ALC TYPE PARA
ORIG. AHF OR HARTMAN NO.:
GEN. Diopatra SUBGEN. SP. papillata
SUBSP. AUTHOR Fauchald 1968 NO. SPEC. 6
OCEAN: N. Pacific COUNTRY: Mexico STATE: Baja California
DIV./ISLAND GRP. Gulf of California

SPEC. LOCAL.:

HABITAT: shelly sand

LAT/LONG 29 20.0' N, 113 00.2' W
COLL. R.H. Parker COLL. DATE 10 Apr 1959
EXPEDITION:
VESSEL: CRUISE NO.: STA. NO. P 71-59
DEPTH: 40 fm GEAR: shell dredge
DONOR DONOR DATE:
CAT. DATE: 28 Aug 1991 CAT. BY: K. Fitzhugh
REMARKS: Holotype: 000334.

ORIGINAL REF.:Fauchald 1968, pp. 11-12, pl. 2, figs. D-I.

ID BY: K. Fauchald ID DATE: ACC. NO. A5486

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

January, 1993 Vol. 11, No. 9

NEXT MEETING:	Bivalve Molluscs and Brachiopods
GUEST SPEAKER:	Paul Scott and Dr. Eric Hochberg of the Santa Barbara Museum of Natural History
DATE:	February 8, 1993 9:30 am - 3:00 pm
LOCATION:	Santa Barbara Museum of Natural History, Santa Barbara, CA **(map is included)**

FEBRUARY 8 MEETING

The Bivalve groups that will be treated are Tellinidae- (potential new species of *Tellina* sp. A of Ljubenkov), Thraciidae- (identifying juveniles specimens of all members in family and deciding correct identification of *Cyathodonta*), Thyasiridae- (identifying all *Thyasira* and checking id on *"Tomburchus" redondoensis*), and specimens that are not *Solemya reidi*. Please bring specimens to the meeting. Paul Scott asked for specimens of *Tellina* to be sent in advance to the Santa Barbara Museum of Natural History tel. (805) 682-4711, ext. 319.

Please bring all species of Brachiopoda that have been collected. Paul has arranged for motel accomodations. A special rate ($60/night) has been provided for February 7-8 at:

Colonial Inn
206 Castillio St.
Santa Barbara, CA 93103
(805) 963-4317 ask for Carmela or John

Reservations are required and be sure to mention you are attending the Natural History Museum workshop. The motel is located near the beach (take Bath St. exit off 101 Northbound and turn left at end of offramp).

FUNDS FOR THIS PUBLICATION PROVIDED IN PART BY
THE ARCO FOUNDATION, CHEVRON USA,
AND TEXACO INC.

SCAMIT Newsletter is not deemed to be a valid publication for formal taxonomic purposes.

MINUTES FROM MEETING ON JANUARY 11

Southern California Coastal Water Research Project (SCCWRP) has contracted with SCAMIT for the production of a master species list of benthic infauna of the southern California shelf. The list will contain taxa reported by the four major dischargers and SCCWRP's Reference Surveys. The money will be used to support publications, newsletters, guest speakers and other SCAMIT activities.

After discussing the protocol, we broke up into smaller groups and addressed the master species list phyletically. Each group reviewed the list for synonyms, spelling and accuracy in reporting.

1993-94 Schedule

Larry Lovell is looking for input on possible speakers and subjects for the next year. He would appreciate any input you might have. You can write him at:

Larry Lovell
1036 Buena Vista
Vista, CA 92083

Suggestions for topics as they pertain to our area include discussing two recent articles in the Proceedings of the Biological Society of Washington 105(4), 1992. The first article is titled New Polychaetous Annelids of the Families Nereididae, Hesionidae, and Nephtyidae from the Santa Maria Basin,California, with a Redescription of *Glycera nana* Johnson, 1901 by Brigitte Hilbig. The other is titled New Species and Records of Phyllodocidae (Polychaeta) from the Continental Shelf and Slope off California by Dr. James A. Blake. It was also suggested that the article on Lumbrinerids by Ann B. Frame in Proc. Biol. Soc. Wash. 105(2), 1992 be discussed.

SCAMIT Officers Elections

Nominations for 1993-94 SCAMIT officers were taken at the meeting. The following names were entered for nomination:

Ron Velarde - President
Larry Lovell - Vice President
Diane O'Donohue - Secretary
Ann Dalkey - Treasurer

Short biographies of all the nominees along with a ballot have been included with this newsletter. Ballots are due by March 31. They can be either mailed to Larry Lovell or brought to the March 8 meeting. See ballot for the mailing address. The results will be announced at the April meeting.

FUTURE MEETINGS

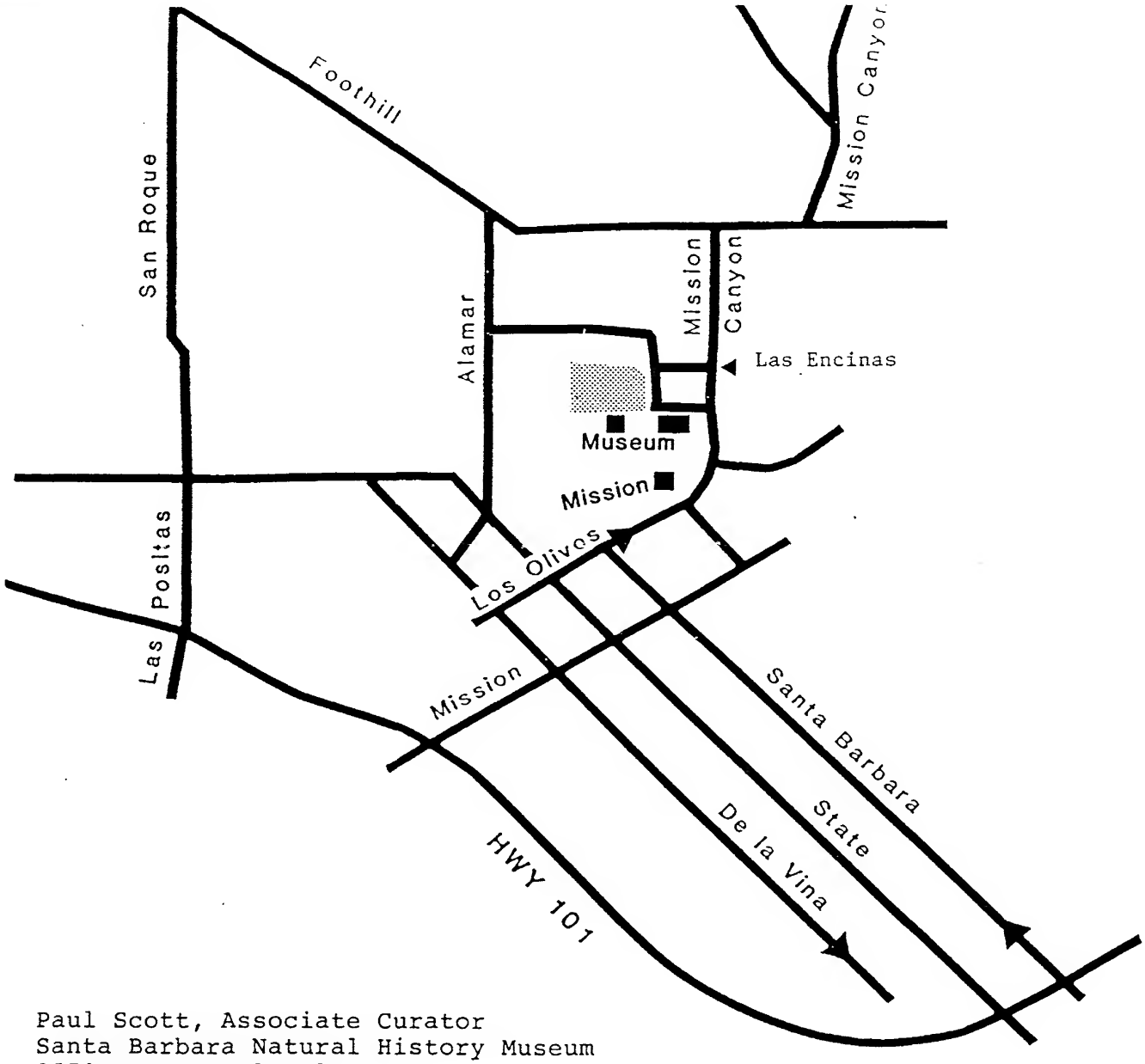
The meeting on March 8, 1993 will be on Sabellid Polychaetes II with Dr. Kirk Fitzhugh of the Los Angeles County Museum of Natural History. Kirk will emphasize the Subfamily Sabellinae (*Demonax, Sabella, Megalomma, Pseudopotamilla* etc). So start collecting specimens now. The meeting will be held at the Allan Hancock Foundation Building, University of Southern California, Los Angeles, CA.

The April 12, 1993 meeting will be on Decapod Crustaceans with Dr. Jodi Martin of the Los Angeles County Museum of Natural History. It will be held at the Los Angeles County Museum of Natural History, Times Mirror Room, Los Angeles, CA.

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4901
Treasurer	Ann Dalkey	(310)648-5611



Paul Scott, Associate Curator
Santa Barbara Natural History Museum
2559 Puesta Del Sol Road
Santa Barbara, CA
(805) 682-4711

Directions from the south to the Santa Barbara Museum

1) Proceed north on US 101 to Santa Barbara, turn right at the first signal (Santa Barbara St.).

2) Proceed up Santa Barbara St. about 3 miles, turn right on Los Olivos.

3) Go past the Mission, bear left at the "Y", proceed about half a mile.

4) Turn left on Las Encinas, turn left on Puesta del Sol, turn right into Museum parking lot.

5) Invertebrate Zoology is on the west side of the new Collection and Research Center (past the whale, west side of parking lot).

CANDIDATE BIOGRAPHIES

PRESIDENT

Ron Velarde

Ron is the current President of SCAMIT and a past Vice-President; he has been a Marine Biologist with the City of San Diego since 1983 and currently is the supervisor of Benthic Taxonomy for the Ocean Monitoring Program. His taxonomic interests include most groups, especially polychaetes and nudibranch mollusks. He earned his B.S. degree in Marine Biology from California State University, Long Beach, in 1976, and did post-graduate research on the systematics and ecology of autolytid polychaetes.

VICE-PRESIDENT

Larry Lovell

Larry is currently a private consultant and Vice-President of SCAMIT. Prior to his independent status, he was employed at Point Loma Wastewater Treatment Facility (City of San Diego). He also worked MEC Analytical Systems for 12 years. Prior to that he worked under the guidance of Dr. Kristian Fauchald in the Worm Room at the Allan Hancock Foundation in 1975 and 1976 on the BLM project. He earned his B.S. in Biology from the University of South Carolina in 1973. His primary taxonomic interest is polychaetes.

SECRETARY

Diane O'Donohue

Diane is a Marine Biologist with the City of San Diego and the current Secretary of SCAMIT. Previously, from 1987 to 1991, she worked for the Southern California Coastal Water Research Project (SCCWRP) specializing in polychaete identification and data management. She did her post graduate work at Long Beach State. Diane has been a member of SCAMIT since 1988 and received a B.S. in Biology from Old Dominion University in Norfolk, Va. in 1986. During her undergraduate training she worked as a student intern sorting samples from the Chesapeake Bay and Atlantic Ocean and she also participated in field sampling. Since 1986 Diane has maintained an interest in the study of marine invertebrates, particularly polychaetes.

TREASURER

Ann Dalkey

Ann is presently the Treasurer for SCAMIT and has held this position since SCAMIT was founded. Ann is a member of the water biology staff at the Hyperion Treatment Plant where she specializes in the identification of polychaetes and amphipod crustaceans. Prior to working at Hyperion, Ann was a member of the laboratory staff at the County Sanitation Districts of Orange County. She worked there for nearly 10 years, reaching a position of senior laboratory and research analyst. She received her B.S. from California State University Long Beach in Marine Biology in 1974 and her M.S. from the same university in 1982. Her thesis research pertained to polychaete bioassay.

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

February, 1993 Vol. 11, No.10

NEXT MEETING: Sabellid Polychaetes II

GUEST SPEAKER: Dr. Kirk Fitzhugh of the Los Angeles Natural History Museum, Los Angeles, CA

DATE: March 8, 1993
9:30 am - 3:00 pm

LOCATION: Allan Hancock Foudation Building, Rm B-55
University of So. California, Los Angeles, CA

MARCH 8 MEETING

Dr. Fitzhugh will emphasize the Subfamily Sabellinae (*Demonax, Sabella, Megalomma, Pseudopotamilla* etc). Please bring any problem specimens and associated literature to the meeting.

FUNDS FOR THIS PUBLICATION PROVIDED IN PART BY
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MINUTES FROM MEETING ON FEBRUARY 8

Larry Lovell announced an upcoming Polychaete Colloquium & Workshop in Cardiff Wales, UK on April 5-8, 1993. The announcement is included in this newsletter. Larry also passed around an order form for the monograph, The Sabellariid Reefs in the Bay of Mont Saint-Mishel, France; Ecology, Geomorphology, Sedimentology, and Geologic Implications. A copy of the order form is included in this newsletter.

It was also announced that the 1993 Annual Meeting of the Southern California Academy of Sciences will be held at California State University Long Beach, Ca on June 4-5, 1993. Included in this newsletter is a list of topics and an address for submitting abstracts.

Dr. Eric Hochberg informed SCAMIT that the 1993 West Coast Coelenterate Colloquium is scheduled for July 16-18, 1993 at Camp Casey, Couperville, or Whidbey Island in Puget Sound. An announcement is included in this newsletter.

Dr. Mary Wicksten wrote to SCAMIT that she is interested in unidentifiable specimens of *Heptacarpus* resembling either *H. palpator* or *H. brevirostris*. She has two odd specimens from Northwest Harbor, San Clemente Island, that key to either species, but have too many dorsal carapace spines and have unusually stout pereopods to match either. They lack the characteristic spine on the merus of the first perepod of *H. fuscimaculatus*. These animals may be the "*H. brevirostris*" of Word and Charwat (1976). She would be glad to examine any specimens resembling this species; should it prove to be undescribed, she would be happy to co-author a description. Please send material to Dr. Mary K. Wicksten, Department of Biology, Texas A&M University, College Station, Tx 77843.

Bivalve and Brachiopoda Workshop

Paul Scott ,Santa Barbara Museum of Natural History, chaired the bivalve workshop. The first mollusk that was discussed was *Tellina carpenteri* vs *T.* sp A (Ljubenkov). After much discussion, it was determined that *T.* sp A (pronounced concentric lines, "variegated" pink and yellow) may be the true *T. carpenteri* (few concentric lines, pink). A voucher sheet will be written describing *Tellina* sp A and renaming our *T. carpenteri, T.* sp B. The next mollusk discussed was *Solemya reidi* vs *S. valvulus*. Paul said that the specimens that were brought to the meeting from southern California were *S. reidi.* Specimens of *Cyathodonta* were then examined. This group is still unclear but the animals from San Diego were identified as *C. pedroana. Cyathodonta dubiosa* and *C. undulata* were also mentioned but it is still unclear whether they occur in southern California.

In the afternoon Dr. Eric Hochberg, SBMNH, presented an overview of brachiopods. Included in this newsletter is a handout produced by Dr. Hochberg. The first two pages contain specimens recorded on the west coast. The species with double asterisks occur in deep water. He also included figures characterizing the difference between the Class Articulata and Inarticulata. The last two pages of the handout lists references.

FUTURE MEETINGS

The April 12, 1993 meeting will be on Decapod Crustaceans with Dr. Jodi Martin of the Los Angeles County Museum of Natural History. It will be held at the Los Angeles County Museum of Natural History, Times Mirror Room, Los Angeles, CA.

The meeting on May 10, 1993 will be devoted to working on the master species list. It will be held at the Cabrillo Marine Museum, San Pedro, Ca.

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4901
Treasurer	Ann Dalkey	(310)648-5611

TAXA	TYPE LOCALITY
CLASS INARTICULATA	
Order Lingulida	
Family Lingulidae	
Glottidia albida (Hinds, 1844)	Magdalena Bay, MEXICO
Glottidia audebarti (Broderip, 1835)	Guayaquil, ECUADOR
Glottidia palmeri Dall, 1871	Head, Gulf of California, MEXICO
Order Acrotretida	
Family Craniidae	
Crania californica Berry, 1921	Santa Monica, CALIFORNIA
Family Discinidae	
Discinisca lamellosa (Broderip, 1834)	Iquique, PERU
Discinisca strigata (Broderip, 1833)	Panama Bay, PANAMA
***Pelagodiscus atlanticus* King	
CLASS ARTICULATA	
Order Rhynchonellida	
Family Basiliolidae	
***Neorhynchia profunda* Cooper	
Family Frieleiidae	
***Frieleia halli* Dall, 1895	Cortez Bank, CALIFORNIA
Family Hemithyrididae	
Hemithyris psittacea (Chemnitz, 1785)	W. GREENLAND

Order Terebratulida

Family Cancellothyrididae	
Terebratulina crossei Davidson, 1882	Sagami Bay, JAPAN
Terebratulina kiiensis Dall & Pilsbry, 1891	Kii Province, JAPAN
Terebratulina unguicula (Carpenter, 1865)	Monterey, CALIFORNIA
Family Laqueidae	
Dallinela obsoleta (Dall, 1891)	Cedros Island, MEXICO
[= Terebratalia occidentalis obsoleta]	
Diestothyris frontalis (Middendorf, 1849)	Sea of Okhotsk
[= Terebratalia frontalis]	
Laqueus californianus (Koch, 1848)	CALIFORNIA
[= L. erythraeus Dall, 1920]	S. Catalina Island, CALIFORNIA
Laqueus vancouveriensis Davidson, 1877	Vancouver Island, BC, CANADA
[= Frenula, Megerlia, Ismeria jeffreysi Dall, 1871]	Port Etches, ALASKA
***Notorygmia abyssa* Cooper	
Terebratalia occidentalis (Dall, 1871)	S. Clemente Island, CALIFORNIA
Terebratalia transversa (Sowerby, 1846)	Puget Sound, WASHNGTON
Terebratalia t. rubescens (Dall, 1910)	San Pedro, CALIFORNA
Family Megathyrididae	
Argyrotheca lowei Hertlein & Grant 1944	
Family Platidiidae	
Platidia hornii (Gabb, 1861)	Santa Barbara, CALIFORNIA [Miocene]
[= Morrisia hornii]	
[= Platidia seminula radiata Dall, 1885]	San Diego, CALIFORNIA
Family Terebratulidae	
***Abyssothyris elongata* Cooper	

Artificial Key to Western Canadian Brachiopoda

1. Shell valves free 2
1. Valve cemented to substrate..... *Crania californica*

2. Foramen entirely in pedicle valve 3
2. Foramen extending to brachial valve..... *Platidia hornii*

3. Foramen situated on beak 4
3. Foramen slit-like on floor of valve *Discinisca lamellosa*

4. Anterior valve margin straight 9
4. Anterior valve margin sulcate 5

5. Shell light coloured 6
5. Shell black or grey..... *Hemithiris psittacea*

6. Shell solid, not translucent 7
6. Shell thin, translucent 8

7. Beak prominent, brachial valve slightly sulcate..... *Diestothyris frontalis*
7. Beak small, brachial valve deeply sulcate *Terebratalia transversa*

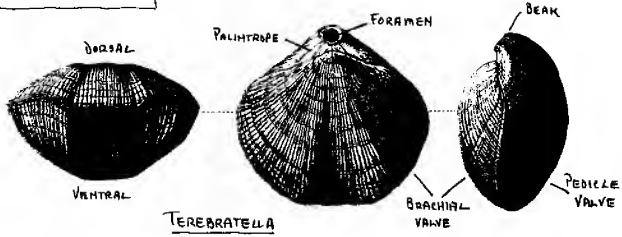
8. Shell inflated, beak narrow..... *Laqueus californianus*
8. Shell flattened, beak wide..... *Frieleia halli*

9. Anterior valve margin smooth 10
9. Anterior valve margin crenulated..... *Terebratulina unguicula*

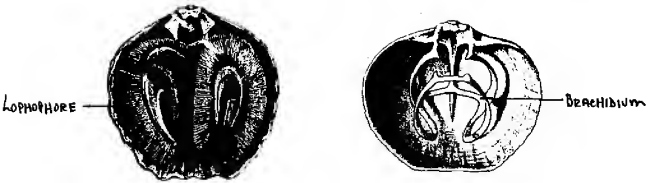
10. Shell elongated, inflated ..... *Terebratulina crossei*
10. Shell discoid, flattened ..... *Terebratulina* sp. indent.

BERNARD (1972)

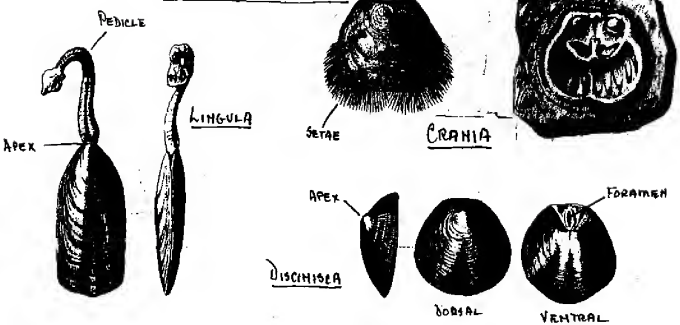
CLASS ARTICULATA

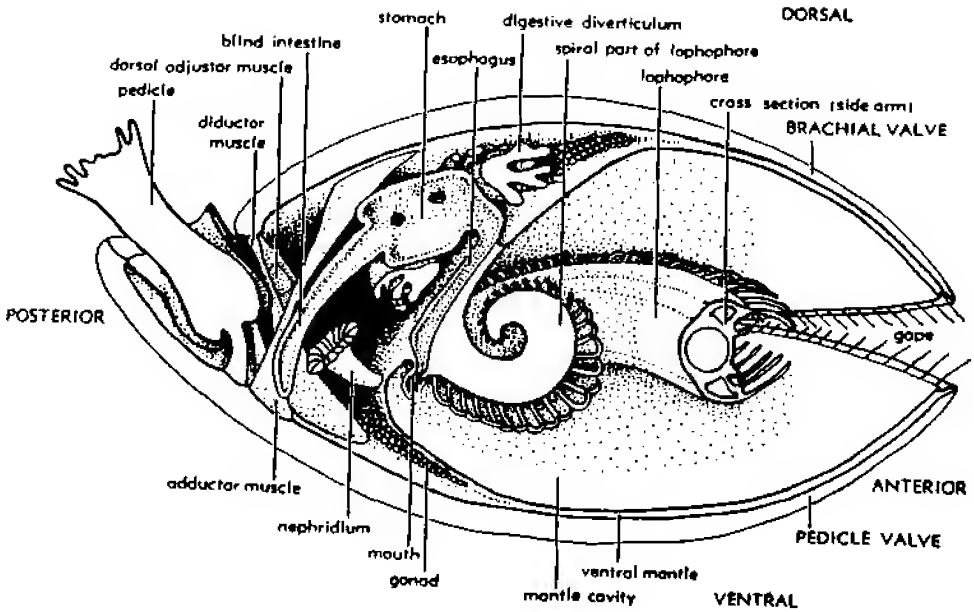


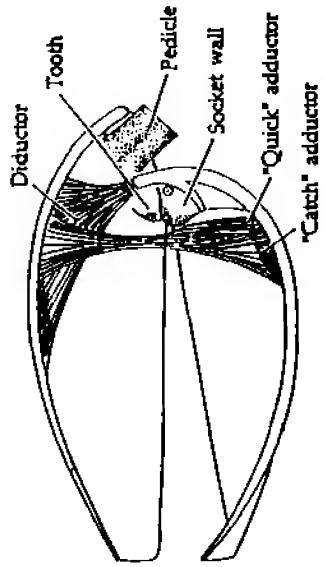
TEREBRATELLA

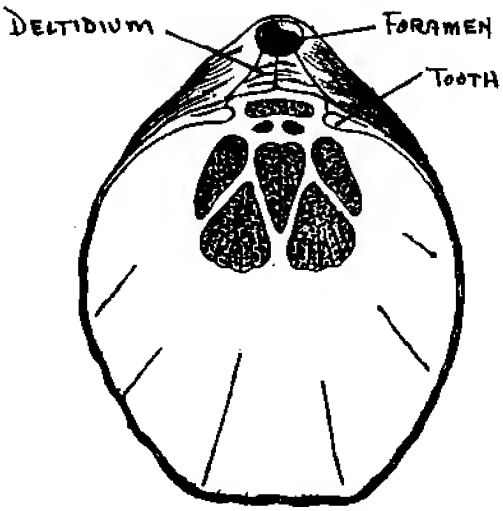


CLASS INARTICULATA

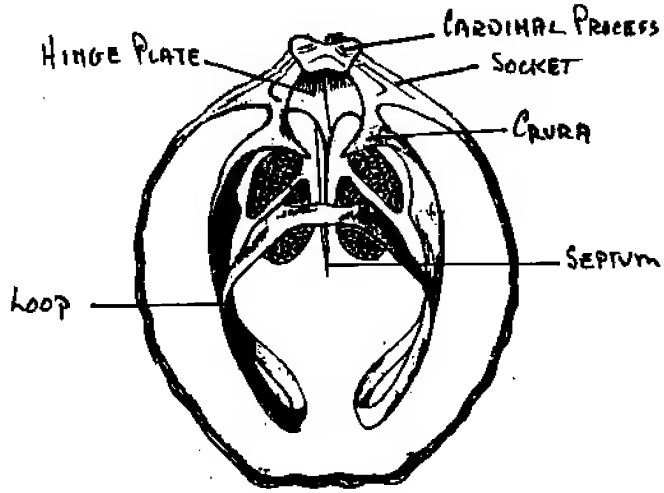








VENTRAL VALVE



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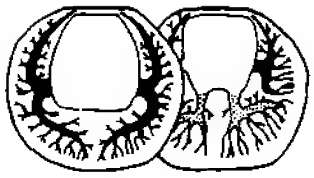

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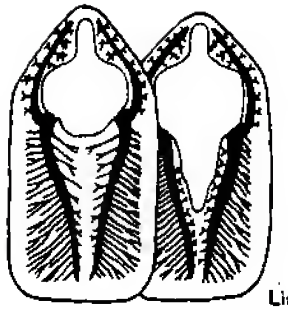

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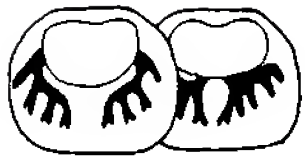

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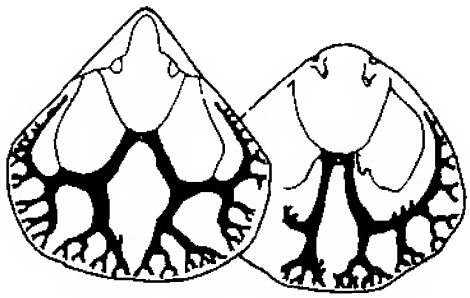

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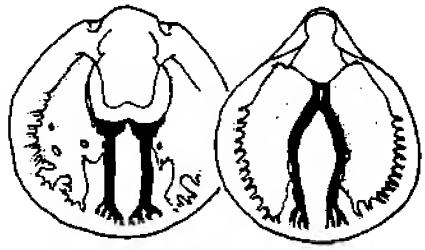

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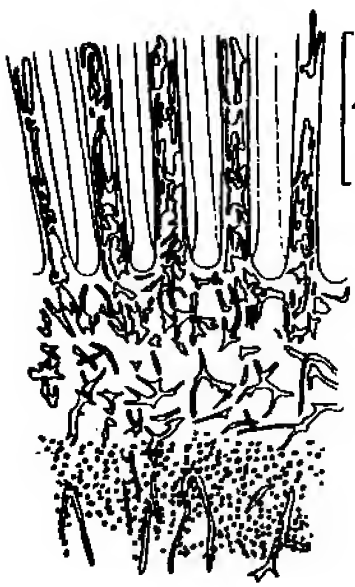

LOPHOPHORE & FILAMENTS

BODY WALL

MANTLE OVER GONAD

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Polychaete Colloquium and Workshop: Cardiff, April 5-8, 1993

Spring will soon be with us and details of the April meeting in Cardiff are being finalised. There are still places available for the Colloquium and Workshop sessions. It's not too late to book accommodation for the meeting but applications should be made *as soon as possible*.

The meeting will begin after lunch on Monday April 5th (to allow travel time to reach Cardiff) with a colloquium session; talks will continue through Tuesday. The laboratory-based Workshop sessions will then occupy Wednesday and the morning of Thursday, closing at lunchtime to allow travel from Cardiff before the Easter weekend.

The timetable for talks is fairly full but we can fit in a few more if forthcoming. A large space is available for the display of Posters. Relevant posters previously presented at other scientific meetings will be welcomed as well as original ones. As well as strictly scientific posters we should like to encourage posters from NRA and Water Purification laboratories showing the geographical area for which that laboratory is responsible and the kind of work it does which involves polychaetes. Please bring a poster with you.

Papers submitted for publication may be based on original material presented in posters as well as on verbal presentations. Definitive titles of papers and posters are now needed and it would be helpful to have abstracts at least before the end of February.

It is hoped that many people will bring specimens to the Workshop session, which will be in a modern teaching laboratory of the School of Biology. Laboratory facilities include video monitors on all lab benches, capable of displaying images from specimens, microscope slides etc. from a central television unit. There is ample bench space to set out prepared specimens and plenty of microscopes (oil immersion and phase contrast). Low power dissecting microscopes are available but they are not of top quality and you may prefer to bring your own.

A third (final) circular will be sent to all confirmed delegates.

Two bursaries (£50.00 each) have been made available by the Council of the Estuarine and Coastal Sciences Association to enable "two students (or similar) to attend the meeting". Applications for bursaries should be made by letter to Dr C. Mettam. Preference will be given to students who are able to make an active contribution (e.g. poster display).

Polychaete Colloquium and workshop Cardiff, April 5–8, 1993

Provisional Programme

Monday April 5

from 11.00	*Registration* in the School of Biology, University of Wales, Cardiff. Laboratories are open for setting up Posters, microscopes etc.
	Lunch
	Conference Session 1 Chairman: ?
14.25-15.00	**Gordon Paterson**, Biodiversity of abyssal plain polychaetes in the NE Atlantic.
15.00-15.25	**Matt Bentley**, Reproductive seasonality and synchrony in polychaetes.
15.25-16.00	**Peter J W Olive**, Population structure of exploitable polychaetes
	Tea/Coffee
16.30-16.55	**Madeleine Havard**, Bait digging and polychaetes.
16.55-17.20	**Lynda Warren**, Protection of polychaetes
17.20-17.45	**Peter Cowin**, The future for the commercial culture of bait worms
19.30	*Reception in University of Wales*

Tuesday April 6

	Conference Session 2 Chairman: ?
09.30-09.55	**Tegwyn Harris**, The ecology of *Ophelia bicornis* in the Exe estuary
09.55-10.20	**Inez Gamenick & Olaf Giere**, Ecophysiological studies: a tool to differentiate *Capitella capitata* (Fabricius 1750) into sibling species?
10.20-10.45	**Roger Bamber**, The role of *Nephtys* in a polychaete community
	Tea/Coffee
11.15-11.50	**Annette Woodham & Susan Chambers**, Bipalpate cirratulids in the UK
11.50-12.20	**John Hartley**, A review of *Ampharete* in Europe
12.20-12.45	**Mary Petersen**, A north European problem in polychaete taxonomy
	Lunch
	Conference Session 2 Chairman: ?
14.15-14.40	**Susan Chambers**, G.M.Spooner's records of polynoids from Plymouth.
14.40-15.05	**Mike Kendall**, Polychaetes from Spitzbergen
15.05-15.30	**M.K. Jassim & Chris Mettam**, Morphological constancy in *Polydora* spp.
15.30-15.55	**Andrew Mackie**, Collecting and preserving polychaetes
	Tea/Coffee
16.30-18.00	Topics for open discussion Discussion on future colloquia/workshops *Close of colloquium proceedings*
19.30	*Buffet Reception in National Museum of Wales*

Wednesday April 7

09.30-18.00 **Workshop Session**

Thursday April 8

09.30 - 12.30 **Workshop Session**

In addition to the colloquium speakers, expected workshop participants include **Phyllis Knight-Jones** (sabellids), Pe
Cadman (*Arenicola*), **Brendan O'Connor**, **Fred Pleijel**.

For your notice board

Polychaete Colloquium & Workshop
Cardiff, April 5—8 1993

a regional meeting organised by the Polychaete Society
hosted by

The National Museum of Wales
and
University of Wales College of Cardiff

The **Polychaete Colloquium & Workshop** offers a programme of talks, posters and laboratory sessions. It provides an opportunity for ecologists and taxonomists to meet and compare notes and specimens.

Several authors contributing to the polychaete identification guides in the series of *Synopses of the British Fauna* (published by the Linnean Society of London and the Estuarine and Coastal Sciences Association) will be participating. There will be chance to try new keys for species identification and to examine specimens. It is intended that people will also bring their own specimens of polychaetes for examination and discussion.

Accommodation is available in Aberdare Hall, an attractive and centrally placed university residence.

Attendance Fees:
£60, includes accommodation (bed and breakfast) for 3 nights (Mon—Wed), coffee breaks during the meeting and proceedings of the colloquium.
Additional Sunday night accommodation can be arranged on request.

Attendance fee for all sessions without accommodation, £8.

For further information and provisional programme contact your local member of **The Polychaete Society** who is

.....

or contact:

Chris Mettam *(Polychaete Colloquium)*
School of Pure and Applied Biology
University of Wales
P.O. Box 915
Cardiff CF1 3TL

Tel: (0222) 874000,ext 5077
Fax: (0222) 874305

SECOND ANNOUNCEMENT, January 1993

Polychaete Colloquium and Workshop: Cardiff, April 5—8, 1993

Accommodation is available in Aberdare Hall, an attractive student residence, from Monday April 4th to Wednesday April 7th inclusive. Accommodation for Sunday night can be arranged on request.

Cardiff is accessible by motorway (M4), rail (service from London every 30 minutes), and air (Cardiff Rhoose Airport is some 15 kilometers from the City centre).

Fees
£60.00 includes: bed and breakfast accommodation for Monday, Tuesday and Wednesday; coffee/tea breaks during the colloquium; colloquium proceedings.

For people not staying in Aberdare Hall there is a conference fee of £8.

Payment should be by cheque made to : **Dr C. Mettam: Polychaete Society.**
Payment should be made as soon as possible and please not later than March 1st 1993. Accommodation is limited and an early reply is advisable if you have not pre-booked.

Definitive Booking and Payment Form

A: If staying in Aberdare Hall of Residence, please confirm your requirements for accommodation

Names of persons (BLOCK CAPITALS please) for whom accommodation is to be reserved in Aberdare Hall on April 5,6 and 7th, 1993.

Name (BLOCK LETTERS)	*Monday*	*Tuesday*	*Wednesday*	*(Sunday extra night)*
1.	.....	.....	.....	yes / no
2.	.....	.....	.....	
3.	.....	.....	.....	
4.	.....	.....	.....	

Total fees @ £60 each .....

There are a few double rooms in the Hall. Please indicate if any 2 persons would prefer to share a double room.

Please state if accommodation is also required on Sunday night for any persons at extra cost. This may be in Aberdare Hall or else in guest house accommodation nearby.

B: If *not* staying in Aberdare Hall of Residence.
Names of persons (BLOCK CAPITALS please) attending the colloquium and workshop.

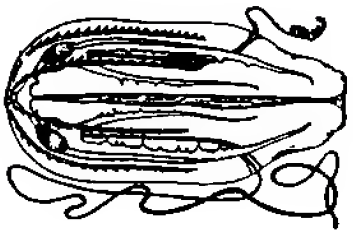
1. ..... 3. .....

2. ..... 4. .....

Total fees @ £8 each .....

^^^

CTENOPHOROPHILES CNIDARIOPHILES



First Announcement
Please post

1993 WEST COAST COELENTERATE COLLOQUIUM

- informal talks and discussions on the biology of cnidarians and ctenophores -

July 16, 17, 18 Camp Casey, Coupeville, Whidbey Island
Summer 1993 **near Anacortes, Washington**

Dear Colleagues,

We have decided to revive an old tradition of periodic casual meetings for all persons interested in Coelenterates, and thus announce that the Eighth West Coast Coelenterate Colloquium will be held next summer. In keeping with past tradition, we are encouraging short talks and informal discussions on any aspect of coelenterate biology (interpreted in the loosest sense to include both Cnidaria and Ctenophora). We especially encourage graduate students to come and present their ideas. Anyone who wishes to attend, but not give a talk, is also welcome.

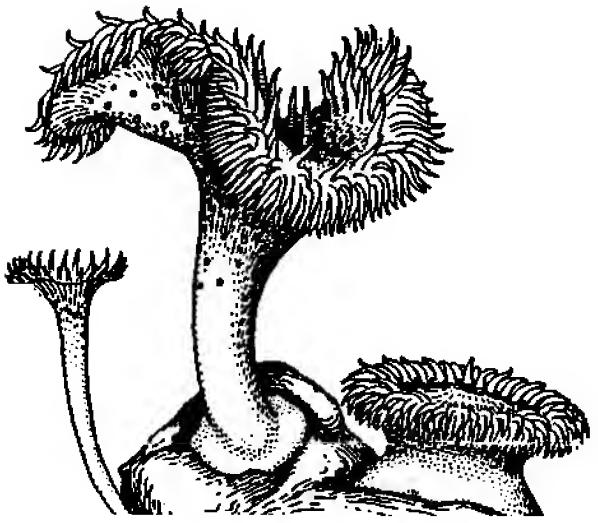
Although the meeting time is not yet firm, it is likely to be 2-3 days across a weekend in late June 1993. We are investigating 3 possible locations, all within a few miles of Anacortes, Washington and will choose based on availibility and low cost. All potential sites are fairly rustic, on the waterfront in Puget Sound, about 2 hours north of Seattle by car.

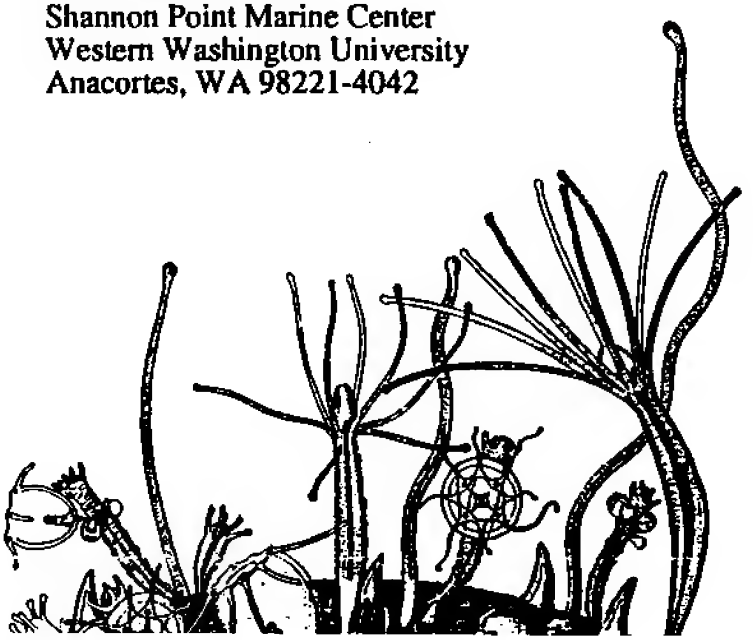
Please distribute this announcement to interested students and faculty members. A second, more detailed announcement will be mailed in early March. If you wish to receive the second announcement, please send us your name and address.

Looking forward to seeing you, the co-conveners -

Claudia Mills
Friday Harbor Laboratories
620 University Road
Friday Harbor, WA 98250

Gisèle Muller-Parker
Shannon Point Marine Center
Western Washington University
Anacortes, WA 98221-4042





1993 Annual Meeting
SOUTHERN CALIFORNIA ACADEMY OF SCIENCES

JUNE 4-5

CALIFORNIA STATE UNIVERSITY
LONG BEACH

CALL FOR PAPERS -- PROFESSIONAL AND STUDENT -- in all disciplines of the natural and social sciences. To college students (graduate or undergraduate) Best Paper Awards are up for the winning, and the single-authored ruling no longer applies! Co-authored papers are eligible, as long as they are the work of the student(s) presenting. (Papers may credit the professor under whom the work was done, but must be the work of the student.)

SYMPOSIA being planned include: Biology of Marine Wastewater Outfalls in Southern California (with a counterpoint symposium on Santa Monica Bay); Air Quality of the Los Angeles Basin; Global Warming; Electron Microscopy. These may or may not be your subject, but for these and all others:

ABSTRACTS DUE MARCH 31

to the Program Chair:

Dr. David L. Soltz
Biology Department
CALIFORNIA STATE UNIVERSITY
Long Beach, CA 90840

Telephone: 310/985-4807

Please see other side for format and instructions -- and be sure to send with your abstract the requested 3x5 file card, giving your name, affiliation, title of your paper, section preferred, and AV equipment needed, if any. This information is vital to plan the sessions and assure a place for your presentation.

ABSTRACT INSTRUCTIONS

With Your Abstract, Please Submit, on a 3x5 file card, the following:

1. Your name, affiliation, mailing address and telephone number
2. Indicate student or professional
3. Title of your paper
4. The subject field in which you wish to present
5. The required time (maximum of 20 minutes)
6. Audio-visual equipment needed, if any

Abstracts will appear exactly as submitted, so they must be cleanly typed and correct in format. Those which do not conform to the guidelines or are mailed after deadline will not appear in the printed program. Abstract must be typed and submitted on an 8-1/2 x 11" sheet. Word-processed abstracts should be laser printed if possible. Typewritten abstracts should should be clean. Do not erase. Arrange in a space 6" wide by 4" high (see example below). Do not show the enclosing box.

1. *TITLE must be in all capital letters. Do not italicize, except species names.*
2. Underline author(s) names(s), listing the presenter first.
3. List the institution and department for each author, as indicated in the sample abstract.
4. Skip one line, and begin text with 5 space paragraph indentation. Single space text.
5. List acknowledgements, if appropriate, within parentheses following text.

Sample Abstract

6"

4"

MICROBIAL ACTIVITY IN THE DIGESTIVE TRACT OF THE HALFMOON, *Medialuna californiensis*. J.S. Kandel[1], J.R. Paterek[2] and M.H. Horn[1]. [1]California State Univ. Fullerton, CA 92634 and [2]Agouron Institute, La Jolla, CA 92037.

We report the presence of a diverse microbial flora and of microbial fermentation products in the hindgut region of the halfmoon, *Medialuna californiensis*, a seaweed-eating fish from southern California coastal waters. Viable aerobic and anaerobic bacteria were found in all sections of the gut, but were of highest concentration (10^5-10^8/ml) in the hindgut. Microscopy revealed vibrios, spirilla, rod-shaped bacteria and flagellated protozoa in the midgut and hindgut, but primarily vibrios and rods in the stomach and foregut. Acetic, isobutyric and butyric acids, the volatile products of microbial breakdown of carbohydrates, were found only in the hindgut, as was ethanol, a nonvolatile product. These results provide the first evidence for microbial fermentation and its possible contribution to the energy supply in a north-temperate herbivorous fish.

BOTH ABSTRACT AND CARD DUE MARCH 31 to the Program Chair:

Dr. David Soltz
Biology Department
CALIFORNIA STATE UNIVERSITY
Long Beach, CA 90840

Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

March, 1993 Vol. 11, No.11

NEXT MEETING:	Decapoda
GUEST SPEAKER:	Dr. Jodi Martin of the Los Angeles Natural History Museum, Los Angeles, CA Dr. Debbie Zmarzly of the City of San Diego, San Diego, CA
DATE:	April 12, 1993 9:30 am - 3:00 pm
LOCATION:	Times Mirror Room Los Angeles Museum of Natural HIstory Los Angeles, California

APRIL 12 MEETING

Dr. Jodi Martin will chair the meeting on Decapoda. Please bring your list and specimens of benthic and trawl caught decapods as we will be emphasizing them at the meeting. As part of the Decapoda meeting, Dr. Debbie Zmarzly will distribute reprints of her recent (SCAMIT-supported!) publication in the Journal of Crustacean Biology on California species of *Pinnixa*. Please let her know of any problems you may have encountered in using the key in this publication. She also requests that you send her (preferably) or bring to the meeting any unusual or difficult specimens that have been keeping you awake at night. Contact Debbie at:

City of San Diego
Ocean Monitoring Program
4077 N. Harbor Drive, MS-45A
San Diego, CA 92101
(619) 692-4900

FUNDS FOR THIS PUBLICATION PROVIDED IN PART BY
THE ARCO FOUNDATION, CHEVRON USA,
AND TEXACO INC.

SCAMIT Newsletter is not deemed to be a valid publication for formal taxonomic purposes.

MINUTES FROM MEETING ON MARCH 8

Ron Velarde announced that for the 1994 Annual Meeting of the Southern California Academy of Sciences SCAMIT might be able to have a taxonomic symposium. Also discussed was the possibility of SCAMIT organizing a volume of the SCAS bulletin devoted to marine taxonomy. If anyone has any other ideas please contact Ron at:

City of San Diego
Ocean Monitoring Program
4077 N. Harbor Drive, MS-45A
San Diego, CA 92101
(619) 692-4903

Larry Lovell informed attending members that he has received some suggestions on topics for next year. Suggestions included a discussion on ITI, the importance of taxonomy in ecology risk assessment and contacting taxonomists who have worked on the MMS atlas to lead workshops. Larry received a letter from Dr. James Blake stating that he would be in Southern California in the spring or summer and offered to chair a workshop on polychate taxonomy with target families being Cirratulidae, Phyllodocidae and/or Hesionidae.

The new Pettibone 1993 Smithsonian Contribution to Zoology no. 538 entitled Scaled Polychaetes (Polynoidae) associated with Ophiuriods and other Invertebrates and review species referred to *Malmgrenia*, McIntosh and replaced by *Malmgreniella*, Hartman, with descriptions of new taxa was passed around and there are some changes pertaining to our area.

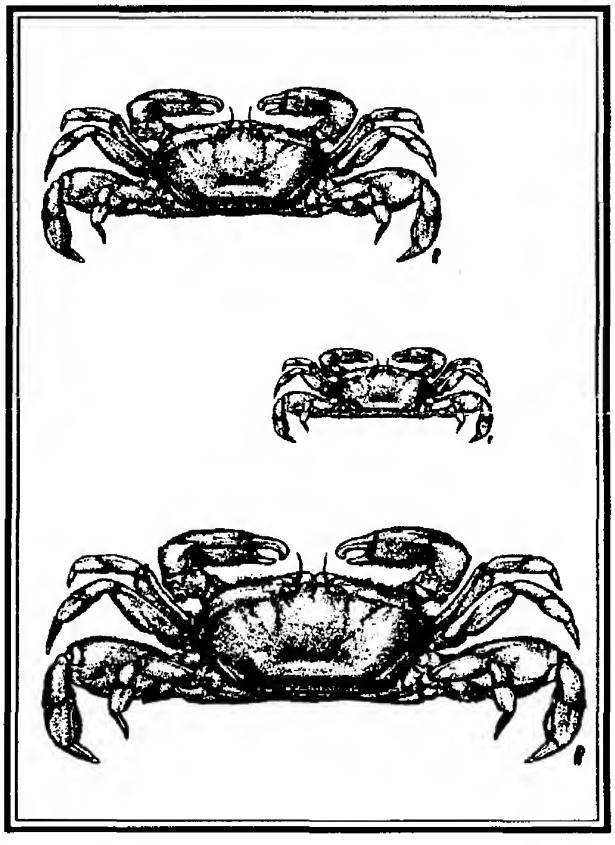
Ron started the meeting by announcing that SCAMIT has received the first installment of money from SCCWRP for the production of the master species list. The rest of the day was then spent reviewing the polychate section for synonyms, spelling and accuracy in reporting.

FUTURE MEETINGS

The meeting on May 10, 1993 will be devoted to working on the master species list. It will be held at the Cabrillo Marine Museum, San Pedro, Ca.

The meeting on June 14, 1993 will cover Anthurid Isopods with Dr. Rick Brusca of the San Diego Natural History Museum and Don Cadien of the Los Angeles County Sanitation Districts. It will be held at the San Diego Natural History Museum, San Diego, Ca.

The Sabellid Polychaete meeting originally scheduled for March 8, 1993 will be on July 12, 1993. Dr. Fitzhugh will emphasize the Subfamily Sabellinae (*Demonax, Sabella, Megalomma, Pseudopotamilla* etc). It will be held in the new polychaete lab at LACMNH.



SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4901
Treasurer	Ann Dalkey	(310)648-5611

Baker Environmental, Inc. (formerly Baker/TSA, Inc.), located near the Greater Pittsburgh International Airport, continues to expand, creating excellent growth opportunities for environmental assessment, design and management professionals. An Environmental Scientist/Ecologist position is available to a person who wants a career with one of the fastest growing environmental consulting companies. The position requires a M.S. in biology, ecology or ecotoxicology or strong environmental science academic credentials and 4 - 6 years experience in ecological assessment programs. Familiarity with CERCLA, RCRA corrective action, CWA and State regulatory programs, as they relate to ecological assessment and Natural Resources Damage Assessment procedures, is essential.

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Southern California Association of Marine Invertebrate Taxonomists

3720 Stephen White Drive
San Pedro, California 90731

April, 1993 Vol. 11, No.12

NEXT MEETING: Master Species List

GUEST SPEAKER: None

DATE: May 10, 1993
9:30 am - 3:00 pm

LOCATION: Cabrillo Marine Museum
San Pedro, CA

MAY 10 MEETING

The meeting will be devoted to working on the master species list. We will be resolving the final version of the list containing the four major dischargers and discussing the addition of the minor dischargers.

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SCAMIT Newsletter is not deemed to be a valid publication for formal taxonomic purposes.

MINUTES FROM MEETING ON APRIL 12

Larry Lovell is looking for suggestions for possible speakers and subjects (especially non-polychaete taxa) for the next year. He would appreciate any input you might have. You can write him at:

Larry Lovell
1036 Buena Vista
Vista, CA 92083

Larry announced again that for the 1994 Annual Meeting of the Southern California Academy of Sciences SCAMIT might be able to have a taxonomic symposium. Also discussed was the possibility of SCAMIT organizing a volume of the SCAS bulletin devoted to marine invertebrate taxonomy. If anyone has any other ideas please contact Ron Velarde at:

City of San Diego
Ocean Monitoring Program
4077 N. Harbor Drive, MS-45A
San Diego, CA 92101

Larry also stated that the officers for 1993-94 will be the same as last year and for members to start thinking about next years election because some of the officers will not be running for office again.

Decapoda Workshop

Dr. Jodi Martin started the workshop by announcing that the American Society of Zoologist annual meeting will be in Los Angeles on December 27-31, 1993. There will be three crustacean symposia; Branchiopods, Maxillopoda (including univalve ostracods), and Camberid crayfish. It was also announced that there will be field trips around Southern California arranged by Hans Kuck and Jodi. They would like to have SCAMIT members volunteer to assist on trips as knowledgeable guides. Jodi is also laying plans for a Crustacean Biodiversity workshop. He will contact international experts on as many families as possible to get estimates on number of known and remaining species to be described.

Jodi began by discussing Decapod higher taxonomy. Based on Spears et al. (1992) Brachyura and Anomura are clearly differentiated by sperm. *Dromidia* (Dromiacea) and *Lithodids* (Alaskan King crab) have been confirmed as anomurans by recent research. Jodi also stated that *Cyclodorippe* (Clythrocerus) is not a doripid. Included in this newsletter are two handouts compiled by Jodi. One of the handouts is the "Classification of Xanthid Crabs". The other is a "Checklist of the Crabs of California" which Jodi would like for SCAMIT members to review and if there are any comments and/or corrections please contact Jodi at the Los Angeles County Museum of Natural History, Los Angeles, Ca.

The following is a list of references that were passed around:

- Williams, A. B. et al 1989. Common and scientific names of aquatic invertebrates from the U.S. and Canada: Decapod Crustaceans. American Fisheries Society Special Publication 17:1-77.

- Harrison, F. W. and A. G. Humes (ed) 1992. Microscopic Anatomy of Invertebrates. Vol. 10. Decapod Crustacea. Wiley-Liss, Inc. NY, 459pp.

- Williams, A. B. 1988. Lobsters of the World-An Illustrated Guide. Osprey Dooks, Huntington, NY. 186pp.

• Serine, R. 1984. Crustaces Decapodes Brachyoures de l'Ocean Indien Occidental et de la Mer Rouge. Xanthoidea:Xanthidae et Trapeziidae. Editions de l'ORSTOM. Institut Francais de Recherche Scientifique pour le Developpement en Copperation, Collection Faune Tropicale n XXIV, Paris. 1-349 + plates I-XLVIII.

• Dawson, E. W. 1989. King crabs of the world (Crustacea:Lithodidae) and their fisheries. A comprehensive bibliography. Misc Publication 101, New Zealand Oceanographic Institute, Div. of Water Sciences, DSIR, Wellington, NZ. 1-338.

• Kim, W. and L. G. Abele. 1988. The snapping shrimp genus *Alpheus* from the EasternPacific(Decapoda:Caridea: Alpheidae). Smithsonian Contribution Zool. No. 454:1-119.

• Holthuis, L. B. 1991. FAO Species Catalogue. Vol. 13. Marine Lobsters of the World. FAO, Rome, 292pp.

If anyone is interested in the following articles please contact Diane O'Donohue at:

City of San Diego
Ocean Monitoring Program
4077 N. Harbor Drive, MS-45A
San Diego, CA 92101
(619) 692-4901

• Wicksten, Mary K. 1990. Key to the Hippolytid Shrimp of the Eastern Pacific Ocean. Fishery Bulletin, U.S. 88:587-598.

• Chace JR., Fenner A. 1992. On the Classification of the Caridea (Decapoda). Crustaceana. 63(1):70-80.

• Abele, L. G. 1991. Comparison of Morphological and Molecular Phylogeny of the Decapoda. Memoirs of the Queensland Museum. 31:101-108.

• Jamieson, B.G.M. 1991. Ultrastructure and Phylogeny of Crustacean Spermatozoa. Memoirs of the Queenland Museum. 31:109-142.

• Spears, Trisha, L. G. Abele and Won Kim. 1992. The Monophyly of Brachyuran Crabs: A Phylogenetic Study Based on 18S rRNA. Systematic Biology. 41(4):446-461.

• Wicksten, Mary K. 1989. Ranges of offshore decapod crustaceans in the eastern Pacific Ocean. Transactions of the San Diego Society of Natural History. 21(19):291-316.

• Wicksten, Mary K. and Michel E. Hendrickx. 1992. Checklist of Penaeoid and Caridean Shrimps (Decapoda: Penaeoidea, Caridea from the Eastern Tropical Pacific. Proceedings of the San Diego Society of Natural History. No. 9:1-11.

• Hendrickx, Michel E. 1992. Distribution and Zoogeographic Affinites of Decapod Crustaceans of the Gulf of California, Mexico. Proceedings of the San Diego Society of Natural History. No. 20:1-12.

FUTURE MEETINGS

The meeting on June 14, 1993 will cover Anthurid Isopods with Dr. Rick Brusca of the San Diego Natural History Museum and Don Cadien of the Los Angeles County Sanitation Districts. It will be held at the San Diego Natural History Museum, San Diego, Ca.

The Sabellid Polychaete meeting originally scheduled for March 8, 1993 will be on July 12, 1993. Dr. Fitzhugh will emphasize the Subfamily Sabellinae (*Demonax, Sabella, Megalomma, Pseudopotamilla* etc). It will be held in the new polychaete lab at LACMNH.

SCAMIT OFFICERS:

If you need any other information concerning SCAMIT please feel free to contact any of the officers.

President	Ron Velarde	(619)692-4903
Vice-President	Larry Lovell	(619)945-1608
Secretary	Diane O'Donohue	(619)692-4901
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Classification of Xanthid Crabs

12 April 1993

J. Martin

There are more species of xanthid crabs on earth than there are in any other crab family. Estimates (such as Powers, 1977; Rice, 1980, Martin, 1989) are in the neighborhood of 130 + genera, and well over 1,000 species described. Work in this country and abroad (mostly France) over the last few decades has led to a greater appreciation of xanthid diversity, with many former "species" being split into several distinct and recognizable forms (e.g. William's work on xanthids in the genus Panopeus along the eastern coasts of North and South America). Because differences among groups of xanthids (genera, subfamilies, etc.) are often slight, in all probability there are large numbers of undescribed species awaiting detection.

Because of the large number of species in the "family," it's not surprising that many workers have tried to make the group more manageable by subdividing it, erecting new families, grouping genera into what appear to be "natural" assemblages, etc. Some of these historical attempts are reviewed starting on page 71 in my 1989 paper on using xanthid larval stages (megalopae) to look at phylogeny (several copies are here, if anyone wants one).

The "classic" approach has been to follow Alcock (1898) (who based his classification on Dana, 1852) or Balss (1957). Alcock recognized two "sections" of xanthids based on the nature of the buccal ridges of the mouth region, each divided into subfamilies as follows:

Alcock (1898)

Section Hyperomerista	Section Hyperolissa
Menippinae	Xanthinae
Ozzinae	Actaeinae
Pilumninae	Chlorodinae
Eriphiinae	

Balss' approach was a little simpler, and probably for that reason was used more widely, and is often used today. He simply recognized four subfamilies:

Xanthinae
Menippinae
Pilumninae
Trapeziinae

More recent workers have added to the complexity of classification, but have not, as far as I can tell, really clarified anything. Some of these approaches include:

Takeda (1976): 14 subfamilies (see my 1989 paper if you're interested)

Guinot (1978): Former xanthids recognized as a superfamily Xanthoidea (not equal to the Xanthoidea of Glaessner, 1969) composed of 8 families:

Carpiliidae
Menippidae
Platyxanthidae
Xanthidae (restricted, and now having the subfamilies Xanthinae, Trichiinae, Actaeinae, Polydectinae, and Euxanthinae)
Pilumnidae
Trapeziidae
Panopeidae
(? tentatively) Geryonidae

Serene (1984) felt that Guinot's work was an improvement, but he disagreed on several points, and came up with a classification that included the Xanthidae (now with 10 subfamilies), Trapeziidae (2 subfamilies), Pilumnidae (5 subfamilies), Carpiliidae (with no further subdivisions), and Menippidae (3 subfamilies). Serene did not treat Guinot's other three xanthoid families (Panopeidae, Platyxanthidae, and Geryonidae) as they do not occur in Asia.

There have been attempts to find evidence for (or against) these groupings, by using zoeal characters (e.g. Rice, 1980, Martin, 1984), megalopal characters (Martin, 1988), and characters of the male pleopods (gonopods) (Martin and Abele, 1986), a feature considered to be of great importance by Guinot. But any universally agreed upon classification of the xanthids, if there is going to be one, seems a long way off.

It is the classification scheme of Guinot (1978) that seems to be gaining favor. If her families are eventually recognized, the changes for the species names and family placement of California crabs would be as follows:

Eurypanopeus hyperconvexus Garth, 1986 would be placed in the family Panopeidae, along with all other Panopeus-like xanthids in Central and South America and along the east coast of the Americas.

Lophopanopeus species would also belong to the family Panopeidae, as would the introduced Rhithropanopeus harrisii (Gould, 1841).

Pilumnus spinohirsutus (Lockington, 1877) would be placed in the family Pilumnidae, and would be the only California member of this family

Micropanope areolata (which Guinot transferred to the genus Gonopanope) would also be a member of the Panopeidae; however, Micropanope latimanus Stimpson, 1871, was not transferred by Guinot (or even mentioned by her), so at present its placement in the correct genus and family are both unknown.

Paraxanthias taylori would be placed in the family Xanthidae (restricted), probably subfamily Xanthinae, but I am unsure about that.

Cycloxanthops and Heteractaea: I do not yet know to which of Guinot's proposed families these genera would belong.

A Checklist of the Crabs of California

J. W. Martin

12 April 1993

Although the decapod crustaceans of California are relatively well known, at the moment there is no published, current guide to, or even a checklist of, all the species reported from the state, other than the still very useful but now somewhat outdated classic by Waldo Schmitt (1921, The Marine Decapod Crustacea of California; University of California Publications in Zoology, vol. 23, University of California Press, Berkeley). This situation is being rectified by a book that has been in the planning stages for some time. The book, which will be a revision of Schmitt's monograph, is being written by Dr. John S. Garth and Ms. Janet Haig (Allan Hancock Foundation) and Dr. Mary Wicksten (Texas A & M University). My understanding at this time is that the authors are searching for a publisher; completion and publication may be a few years away.

Another work in progress is a monograph on the crab family Xanthidae in the eastern Pacific. This project, a joint effort by Dr. John S. Garth and myself, will likely appear in several different parts, corresponding to what we feel are logical taxonomic subdivisions of the family. The first such part will deal with the subfamily (or family) Panopeinae (Panopeidae). Relatively few of the xanthids that we will be treating are found in California waters, the majority being from the tropical eastern Pacific.

The following checklist was originally compiled by me in early 1988, in an attempt to familiarize myself with the local crab fauna. From time to time I have tried to update the list for some families, but it is still far from being either complete or up to date. It is important to note that this list does not constitute a publication as defined by ICZN regulations and should not be cited as such.

It is also important to note that the species "treatments" are extremely superficial and uneven; for some species no synonymy has been included, for others only some of the literature has been consulted, for most only one or two of the more more salient citations are given, etc. No ecological information (depth, habitat, etc.) has been included either.

The information in this checklist is not original research but rather was compiled from previous publications, notably Schmitt (1921), Garth (1958, 1986), Garth and Abbott (1980), Garth and Stevenson (1966), Williams (1974), Wicksten (1980, 1984, 1989), Haig and Wicksten (1975), Allen (1977), Word and Charwat (1975), Hart (1982), Nations (1975, 1979), and Zmarzly (1992). I have given this list to Dr. Garth, but not in time for him to have looked it over prior to today's SCAMIT meeting. Undoubtedly Dr. Garth, as well as many SCAMIT members, will have corrections and additions to this list.

The "higher classification" follows, for the most part, Bowman and Abele (1982). That classification is now outdated in several respects, such as the inclusion of dromiacean crabs as brachyurans, recognition of "sections" such as the Oxystomata that are most likely artificial assemblages, treatment of the Xanthidae as a single family (rather than a superfamily), correction of some family names (e.g. Cryptochiridae instead of Haplocarcinidae), etc. But for purposes of this checklist it still serves as a convenient framework for listing species, as long as workers recognize that several taxonomic changes have been, and are being, proposed that will eventually change this classification.

Although not all families of the Brachyura are represented in California waters, I have included all currently recognized crab families on this list, for two reasons. First, I find it helpful and interesting to view the larger context in which local species are placed. Second, one never knows what might be encountered for the first time, even in waters as relatively well known as those of coastal California (for example the 1986 discovery by Dr. Garth of a new xanthid species of the genus Eurypanopeus from off Anacapa Island, and the new thalassinoid that Don Cadien and I are describing from the Santa Maria Basin). Families for which no species are as yet known from California waters are indicated.

Allen, 1977
Austin, 1985
Bowman and Abele, 1982
Garth, 1958, 1986
Garth and Abbott, 1980
Garth and Stevenson, 1966
Haig and Wicksten, 1975
Hart, 1982
Nations, 1975, 1979
Rathbun, 1918, 1925, 1930, 1937
Schmitt, 1921
Wicksten, 1980, 1984, 1989
Williams, 1974
Word and Charwat, 1975
Zmarzly, 1992

INFRAORDER BRACHYURA

Section Dromiacea

SUPERFAMILY DROMIOIDEA

FAMILY DROMIIDAE

Dromidia larraburei Rathbun, 1910
Dromidia sarraburei Rathbun, 1910: 553, pl. 48, fig. 4 (misspelling; named for Senor Don Carlos Larrabure y Correa).
Dromidia segnipes Weymouth, 1910: 15, pl. 1, figs. 1-2.
Dromidia larraburei Rathbun, 1910. --Schmitt, 1921: 183, pl. 33, fig. 1.

Monterey Bay and Long Beach, California, to Bahia Magdalena, Baja California, and Galapagos Islands (Schmitt, 1921: 183)

FAMILY DYNOMENIDAE
(No known species in California waters)

FAMILY HOMOLODROMIIDAE
(No known species in California waters)

Section Archaeobrachyura

SUPERFAMILY TYMOLOIDEA

Note: Williams et al. (1989) list, as a superfamily, the Cyclodorippoidea, and do not list the Tymoloidea (although they claim to follow Bowman and Abele's classification), and they list the family Cyclodorippidae in this superfamily. The signficance to species in southern California is that the genus Clythrocerus would now belong to the superfamily Cyclodorippoidea, rather than to the Dorippoidea, and to the family Cyclodorippidae rather than to the Dorippidae.

FAMILY CYMONOMIDAE
(No known species in California waters)

FAMILY TYMOLIDAE
(No known species in California waters)

SUPERFAMILY HOMOLOIDEA

FAMILY HOMOLIDAE

Paromola faxoni (Schmitt, 1921)
Homola faxoni Schmitt, 1921: 184-185, pl. 31, fig. 7
Paromola faxoni. --Rathbun, 1937: 68-69, pl. 18, fig. 1; table 19. --Church, 1971: 113 (color photograph, presumably this species). --Wicksten, 1983: 185, fig. 1b (drawing based on Church's photograph). --Kuck and Martin, in press.

Tajiguas, California, south to Isla Cedros (Baja California) (Kuck and Martin, in press)

FAMILY LATREILLIIDAE
(No known species in California waters)

SUPERFAMILY RANINOIDEA

FAMILY RANINIDAE
(No known species in California waters)

Section Oxystomata

SUPERFAMILY DORIPPOIDEA

FAMILY DORIPPIDAE
[see previous note concerning placment of these "dorippids" in the family Cyclodorippidae, superfamily Cyclodorippoidea. If that arrangement is accepted (and unfortunately I have not tracked down the reasons for or publications stating this change) then there would be no dorippids in California.]

Clythrocerus decorus Rathbun, 1933
Rathbun, 1937: 118, fig. 30, pl. 34, figs. 3, 4.

Off Brockway Point, Santa Rosa Island; off Catalina Island; off Point Loma (Rathbun, 1918).

Clythrocerus planus (Rathbun, 1900)
Cyclodorippe plana Rathbun, 1900: 519. --Schmitt, 1921: 186.
Clythroceros planus Rathbun, 1900. --Rathbun, 1904: 168, pl. 9, fig. 4. --Nininger, 1918: 36, figs. 9, 10. --Wicksten, 1980: 361 (table, distribution). --Wicksten, 1982: 306 (behavior)

Catalina Island (Channel Islands) and Point Fermin; Laguna Beach (Schmitt, 1921: 186); Huntington Beach (Wicksten, 1982: 306)

SUPERFAMILY LEUCOSIOIDEA

FAMILY CALAPPIDAE

Mursia gaudichaudii (H. Milne Edwards, 1837)
Platymera gaudichaudii Milne Edwards, 1837: 108. --Milne Edwards and Lucas (in D'Orbigny), 1843: 28, pl. 13; 1847 [? see Schmitt, 1921: 190]. --Holmes, 1900: 99. --Rathbun, 1904: 170.
Mursia gaudichaudii. --Weymouth, 1910: 19. --Schmitt, 1921: 190, fig. 118. --Rathbun, 1937: 220. --Haig and Wicksten, 1975: 102. --Austin, 1985: 645 (list).

Farallon Islands, California to Chile (Schmitt, 1921: 190; Rathbun, 1937: 220). Range extended north to 18.7 mi WSW of Klamath River, California (Haig and Wicksten, 1975: 102)

FAMILY LEUCOSIIDAE

Randallia ornata (Randall, 1839)
Ilia ornata Randall, 1839: 129.
Randallia ornata Randall. --Stimpson, 1854: 471, pl. 19, fig. 3. --Holmes, 1900: 100. --Rathbun, 1904: 170. --Weymouth, 1910: 18, pl. 1, fig. 3. --Baker, 1912: 102. --Schmitt, 1921: 188, fig. 116. --Austin, 1985: 646 (list).

Central California (Mendocino County) to Bahia Magdalena, Baja California (Schmitt, 1921: 187; Allen, 1977)

Randallia bulligera Rathbun, 1898
Randallia bulligera Rathbun, 1898: 614, pl. 44, fig. 6. --Holmes, 1900: 101. --Weymouth, 1910: 19. --Schmitt, 1921: 189, fig. 117.

Monterey Bay, California (questionable according to Schmitt, 1921) to Bahia Magdalena, Baja California (Schmitt, 1921: 189)

Section Oxyrhyncha

SUPERFAMILY MAJOIDEA

FAMILY MAJIDAE

Chionoecetes tanneri Rathbun, 1893
Garth, 1958: 156, pl. I, fig. 8; pl. 16, fig. 2 (contains prior synonymy). --Austin, 1985: 1985: 646 (list)

Off Sea Lion Rock, Washington to off Los Coronados Islands and off Cortez Bank, Mexico (Garth, 1958); southern Alaska to Baja California (Austin, 1985).

Chorilia longipes Dana, 1851
Garth, 1958: 263, pl. P, figs. 4, 5; pl. 30 (contains prior synonymy). --Austin, 1985: 646 (list)

Shumagin Bank, Alaska, south to off Santa Rosa Island (Channel Islands). A different subspecies, C. l. japonica, occurs in the western Pacific (Garth, 1958: 263-264)

Chlorilia longipes turgida Rathbun, 1924
Garth, 1958: 263, pl. P, figs. 4, 5; pl. 30 (contains prior synonymy)

Monterey Bay south to Cortez Bank, Baja California (Garth, 1958: 264-265) (see Garth, 1958: 263-268 for discussion of the subspecies) Wicksten, 1980: 363 (table, distribution)

Epialtoides hiltoni (Rathbun, 1923)
Garth, 1958: 234, pl. O, fig. 7; pl. 26, fig. 3 (contains prior synonymy). --Garth and Abbott, 1980

Santa Catalina Island (Channel Islands) and Laguna Beach (Orange County) to Bahia Magdalena; also Isla Guadalupe, Islas San Benito,

and Isla Cedros (Baja California) (Garth, 1958: 233-234; Garth and Abbott, 1980)

Erileptus spinosus Rathbun, 1893

Erileptus spinosus Rathbun, 1893: 227. --Holmes, 1900: 21. --Rathbun, 1904: 171, pl. 10, fig. 1. --Weymouth, 1910: 27, pl. 3, fig. 7. -- Garth, 1958: 91, pl. E, fig. 8; pl. 5, fig. 2 (contains prior synonymy). --Wicksten, 1980: 361 (table, distribution)
Anasimus rostratus Rathbun, 1893: 226. --Rathbun, 1904: 171, pl. 10, fig. 4
Anasimus spinosus (Rathbun). --Schmitt, 1921: 196, fig. 121.

San Miguel Island and off Santa Barbara, California, to Bahia Magdalena (Baja California), including the Gulf of California; also Panama (Garth, 1958; Wicksten, 1980)

Herbstia parvifrons Randall, 1839

Garth, 1958: 316, pl. S, fig. 5; pl. 34, fig. 2 (contains prior synonymy). --Garth and Abbott, 1980: . --Austin, 1985: 646 (list). --Foster and Schiel, 1985: 67 (list).

Monterey Bay to Bahia Magdalena (Baja California) (Garth and Abbott, 1980) Schmitt, 1921: 215.

Loxorhynchus crispatus Stimpson, 1857

Garth, 1958: 260, pl. P, fig. 3; pl. 27, fig. 2; pl. 28, fig. 1 (contains prior synonymy). --Garth and Abbott, 1980
Rathbun, 1925: 200. Haig and Wicksten, 1975: 103. --Austin, 1985: 646 (list). --Foster and Schiel, 1985: 67 (list).

Redding Rock (Humboldt County) to Isla Natividad (Baja California) (Garth and Abbott, 1980).

Loxorhynchus grandis Stimpson, 1857

Garth, 1958: 257, pl. P, fig. 2; pl. 29 (contains prior synonymy). --Charwat, 1975: 61 (fig.), 62. --Garth and Abbott, 1980. --Austin, 1985: 646 (list). --Foster and Schiel, 1985: 67 (list).

Loxorynchus grandis Stimpson, 1857 (part)
Loxorhynchys grandus. --Weymouth, 1910
Mithrax rostratus. --Boone, 1930 (part)

Cordell Bank (Marin County) to Punta San Bartolome (Baja California) (Garth, 1958; Garth and Abbott, 1980)

Mimulus foliatus Stimpson, 1860

Garth, 1958: 183, pl. L, fig. 1; pl. 25, fig. 3 (contains prior synonymy). --Austin, 1985: 646 (list).

Captain's Bay (Unalaska, Alaska) to Point Arguello (Santa Barbara County) and Santa Cruz Island (Channel Islands), and occasionally San Diego (Garth, 1958: 183; Garth and Abbott, 1980) Schmitt,

1921: 204.

Mithrax (Mithraculus) denticulatus Bell, 1835
Garth, 1958: 372, pl. V, fig. 9; pl. 42, fig. 2 (contains prior synonymy)

San Diego (extralimital) to Manta Bay, Ecuador (Garth, 1958: 373).

Oregonia gracilis Dana, 1851
Oregonia gracilis Dana, 1851: 270. --Dana, 1852: 106, pl. 3, fig. 2 (1855; date of publication of plates). --Doflein, 1899: 183. --Holmes, 1900: 19. --Rathbun, 1904: 171. --Way, 1917: 369, fig. 20. --Schmitt, 1921: 198, fig. 122. --Garth, 1958: 136, pl. I, fig. 2; pl. 10; pl. 11, fig. 1. --Wicksten, 1984: 136 (list).

Alaska to Monterey Bay (Garth, 1958; Wicksten, 1984)

Pelia tumida (Lockington, 1877)
Garth, 1958: 271, pl. Q, fig. 1; pl. 31, fig. 2 (contains prior synonymy). --Garth and Abbott, 1980: . --Foster and Schiel, 1985: 67 (list), 69.

Monterey Bay to Bahia de Petatlan (Mexico), including Gulf of California (Garth, 1958; Garth and Abbott, 1980)

Podochela hemphilli (Lockington, 1877)
Microrhynchus hemphilli Lockington, 1877: 30.
Podochela hemphilli. --Holmes, 1900: 17. --Rathbun, 1904: 171, pl. 10, fig. 2. --Weymouth, 1910: 26, pl. 2, fig. 6. --Nininger, 1918: 39, fig. 14. --Schmitt, 1921: 195, fig. 120. --Garth, 1958: 104, pl. H, fig. 6; pl. 7 (contains prior synonymy)

From Monterey Bay (San Luis Obispo County) and San Miguel Island (Channel Islands) to Bahia Magdalena (Baja California) (Garth, 1958: 106)

Podochela lobifrons Rathbun, 1893
Garth, 1958: 116, pl. H, fig. 1; pl. 8, fig. 1 (contains prior synonymy)

Point Mugu (Ventura County), California; Brockway Point, Santa Rosa Island and off Santa Catalina Island (Channel Islands) to west coast of Baja California and Gulf of California (Garth, 1958)

Pugettia dalli Rathbun, 1893
Garth, 1958: 199, pl. L, fig. 6; pl. 21, fig. 1 (contains prior synonymy)

San Miguel Island (Channel Islands) to Cabo Thurloe (Baja California) (Garth, 1958: 200; Garth and Abbott, 1980)

Pugettia gracilis Dana, 1851
Garth, 1958: 196, pl. L, fig. 4; pl. 20, fig. 2 (contains prior synonymy). --Garth and Abbott, 1980 . --Austin, 1985: 646

(list).

Attu Island (Aleutian Islands, Alaska) to Monterey Bay (Garth, 1958: 196; Garth and Abbott, 1980)

Pugettia producta (Randall, 1839)
Epialtus productus Randall, 1839: 110. --Rathbun, 1884: 778, pl. 268. --Holmes, 1900: 22, pl. 1, fig. 1. --Rathbun, 1904: 173. --Weymouth, 1910: 28, fig. 9. --Baker, 1912: 100. --Schmitt, 1921: 201, fig. 124.
Pugettia producta (Randall). --Garth, 1958: 188, pl. L, fig. 2; pl. 19 (contains prior synonymy). --Reish, 1972: 85, fig. 278. Austin, 1985: 646 (list). --Foster and Schiel, 1985: 60, fig. 20 (part), 63 (list), 66. --Garth and Abbott, 1980: 00.

Prince of Wales Island (Alaska) to Punta Asuncion (Baja California) (Garth, 1958; Garth and Abbott, 1980)

Pugettia richii Dana, 1851
Garth, 1958: 193, pl. L, fig. 3; pl. 20, fig. 1
Garth and Abbott, 1980
Austin, 1985: 647 (list)

Prince of Wales Island (Alaska) to Isla San Geronimo (Baja California) (Garth, 1958: 193; Garth and Abbott, 1980)

Pugettia venetiae Rathbun, 1924
Garth, 1958: 204, pl. L, fig. 5; pl. 21, fig. 2 (contains prior synonymy)

From end of Santa Catalina Island (Channel Islands) and off San Pedro (Los Angeles County) to Bahia Magdalena (Garth, 1958: 204)

Pyromaia tuberculata tuberculata (Lockington, 1877)
Garth, 1958: 85, pl. E, fig. 7; pl. 6, figs. 1, 2 (contains prior synonymy)
[Plate 6, fig. 1 is of this "form," which is the typical form found off California]

Austin, 1985: 647 (list; as P. tuberculata)

Tomales Bay (Marin County) south to Cabo Corrientos (Colombia); also Japan (Garth and Abbott, 1980)

Pyromaia tuberculata mexicana (Rathbun, 1893)
Garth, 1958: 85, pl. E, fig. 7; pl. 6, figs. 1, 2 (contains prior synonymy)

This form apparently is restricted to the Gulf of California (Garth, 1958: 89)

For the species (both subspecies) the range would be:

Tomales Bay (Marin County) to off Cape Corrientes, Colombia,

including entire Gulf of California (Garth, 1958: 86-87)

Scyra acutifrons Dana, 1851
Garth, 1958: 252, pl. P, fig. 1; pl. 27, fig. 1 (contains prior synonymy)
Austin, 1985: 647 (list).

Kachemak Bay (Cook Inlet, Alaska) to Punta San Carlos (Baja California) (Garth, 1958: 252-253; Garth and Abbott, 1980)

Garth (1958) notes that there is a northern and a southern form ("facies") to this species, a similar situation to what is seen in Chlorilia longipes.

Taliepus nuttalli (Randall, 1839)
Epialtus nuttalli Randall, 1839: 109, pl. 3. --Holmes, 1900: 23. --Rathbun, 1904: 173. --Schmitt, 1921: 202, fig. 125.
Taliepus nuttalli (Randall). --Garth, 1958: 208, pl. L, fig. 8; pl. 22. --Garth and Abbott, 1980: 00. --Foster and Schiel, 1985: 63 (list), 66.

Santa Barbara to Bahia Magdalena (Baja California) (Garth, 1958; Garth and Abbott, 1980)

SUPERFAMILY HYMENOSOMATOIDEA

FAMILY HYMENOSOMATIDAE
(No known species in California waters)

SUPERFAMILY MIMILAMBROIDEA

FAMILY MIMILAMBRIDAE
(No known species in California waters)

SUPERFAMILY PARTHENOPOIDEA

FAMILY PARTHENOPIDAE

Heterocrypta occidentalis (Dana, 1854)
Cryptopodia occidentalis Dana, 1854: 18.
Heterocrypta occidentalis (Dana). --Holmes, 1900: 44. --Rathbun, 1904: 170. --Weymouth, 1910: 21, pl. 2, figs. 4, 5. --Schmitt, 1921: 192, fig. 119. --Garth, 1958: 476, pl. Z_4, figs. 14, 14a; pl. 55, fig. 2. --Austin, 1985: 647 (list).

From Drakes Bay (Marin County) south to Dewey Channel (Baja California), including all Channel Islands (Garth, 1958)

Leiolambrus punctatissimus (Owen, 1839)
Original report from California almost certainly an error; see Garth, 1958: 462-46

Section Cancridea

SUPERFAMILY CANCROIDEA

FAMILY ATELECYCLIDAE

Telmessus cheiragonus (Tilesius, 1815)
Rathbun, 1930: 150, fig. 21, 22a-c (contains prior synonymy)

Northern California (Rathbun, 1930: 152; Austin, 1985: 647 (list))

FAMILY CANCRIDAE

Cancer amphioetus Rathbun, 1898
Rathbun, 1898: 582 (new name for Trichocarcinus dentatus Miers, 1879). --Rathbun, 1930a: 205 (contains prior synonymy). --Nations, 1975: 30, figs. 4, 6, 15, 16, 30-7, 30-8, tables 1, 2, 4. --Nations, 1979 (mostly repeating information in 1975 paper).

La Jolla, California, to Gulf of California; also Japan and Korea (Rathbun, 1930a) and northern China (Shen, 1932: 97) (Nations, 1975).

Cancer antennarius Stimpson, 1856
Cancer antennaria Stimpson, 1856: 88
Cancer antennarius Stimpson, 1857: 462. --Rathbun, 1930a: 210 (contains prior synonymy). --Reish, 1972: 85, fig. 279. --Nations, 1975: 31, figs. 4, 13, 14, 32-5, 32-6, tables 1, 2, 5. --Nations, 1979: (mostly repeating information in 1975 paper). Garth and Abbott, 1980: 00). --Austin, 1985: 647 (list). --Foster and Schiel, 1985: 67 (list).
Cancer productus Randall, 1839. --Rathbun, 1926: 62, 63 (in part)
Cancer anthonyi Rathbun, 1897. --Rathbun, 1926: 64 (in part)

Coos Bay, Oregon, to Baja California, including Islas de Todos Santos; probably not British Columbia (Garth and Abbott, 1980)

Cancer anthonyi Rathbun, 1897
Cancer anthonyi Rathbun, 1897: 111. --Rathbun, 1926: 64. --Rathbun, 1930a: 218 (contains prior synonymy). --Reish, 1972: 86, fig. 279. --Nations, 1975: 32, figs. 4, 13, 14, 35-5, 35-6, tables 1, 2, 6. --Nations, 1979: (mostly repeating information in 1975 paper). --Austin, 1985: 647 (list). --Foster and Schiel, 1985: 67 (list).
Cancer gracilis Dana, 1852. --Rathbun, 1926: 65 (in part)
Cancer productus Randall, 1839. --Rathbun, 1926: 62 (in part).

Humboldt Bay to Bahia Magdalena (Baja California); uncommon north of San Pedro (Los Angeles County) (Garth and Abbott, 1980)

Cancer branneri Rathbun, 1926
Cancer branneri Rathbun, 1926: 63. --Rathbun, 1930a: 211 (contains

prior synonymy). --Menzies, 1951: 170. --Nations, 1975: 33, figs. 4, 15, 16, 31-1, 31-2, tables 1, 2, 7. --Nations, 1979: (mostly repeating information in 1975 paper). --Austin, 1985: 647 (list).

Cancer gracilis Dana, 1852

Cancer gracilis Dana, 1852: 73. --Rathbun, 1926: 65. --Rathbun, 1930a: 219 (contains prior synonymy). --Menzies, 1951: 166. --Nations, 1975: 34, figs. 4, 17, 18, 36-1, 36-2, tables 1, 2, 8. --Nations, 1979: (mostly repeating information in 1975 paper). --Garth and Abbott, 1980: 00, . --Austin, 1985: 647 (list).
Cancer anthonyi Rathbun, 1897. --Rathbun, 1926: 64 (in part).
Cancer magister Dana, 1852. --Rathbun, 1926: 64 (in part).
Cancer productus Randall, 1839. --Rathbun, 1926: 62 (in part).

Prince William Sound (Alaska) to Bahia Playa Maria (Baja California); usually not taken intertidally south of central California (Garth and Abbott, 1980)

Cancer jordani Rathbun, 1900

Cancer jordani Rathbun, 1900: 133. --Rathbun, 1930a: 215 (contains prior synonymy). --Menzies, 1951: 169. --Nations, 1975: 36, figs. 4, 15, 16, 31-3, 31-4, tables 1, 2, 9. --Nations, 1979: (mostly repeating information in 1975 paper). --Austin, 1985: 647 (list). --Foster and Schiel, 1985: 67 (list).
Cancer antennarius Stimpson, 1856. --Rathbun, 1926: 64 (in part).

Coos Bay, Oregon, to Cabo Thurloe (Baja California) (Garth and Abbott, 1980)

Cancer magister Dana, 1852

Cancer magister Danda, 1852: 73. --Rathbun, 1926: 64. Rathbun, 1930a: 222 (contains prior synonymy). --Menzies, 1951: 168. --Nations, 1975: 37, figs. 4, 17, 18, 23, 34-1, 34-2, tables 1, 2, 10. --Nations, 1979: (mostly repeating information in 1975 paper). --Austin, 1985: 648 (list).
Cancer productus Randall, 1839. --Rathbun, 1926: 62 (in part).
Cancer breweri Gabb, 1869. --Lawson, 1894: 261.

Tanaga Island (Aleutian Islands, Alaska) to Pismo Beach, San Luis Obispo County, rarely to Santa Barbara; probably not to Bahia Magdalena (Baja California) (Garth and Abbott, 1980)

Cancer oregonensis (Dana, 1852)

Cancer oregonensis. --Rathbun, 1898: 581. --Rathbun, 1930a: 226 (contains prior synonymy). --Zullo, 1969: 347-361. --Nations, 1975: 38, figs. 4, 17, 18, 30-1, 30-2, tables 1, 2, 11. --Nations, 1979: (mostly repeating information in 1975 paper). --Austin, 1985: 648 (list).
Cancer productus Randall, 1839. --Rathbun, 1926: 62 (in part).
Lophopanopeus somaterianus Rathbun, 1930a: 332. --Menzies, 1948: 22.

St. George Island (Pribilof Islands, Alaska) to Palos Verdes (Los Angeles County); probably not Bahia Magdalena (Baja California)

(Garth and Abbott, 1980)

Cancer productus Randall, 1839
Cancer productus Randall, 1839: 116. --Rathbun, 1926: 62. --Rathbun, 1930a: 203. not Menzies, 1951: 168. --Reisch, 1972: 86, fig. 281. --Nations, 1975: 40, figs. 4, 13, 14, 39-1, 39-2, tables 1, 2, 12. --Nations, 1979: (mostly repeating information in 1975 paper). --Austin, 1985: 648 (list). --Foster and Schiel, 1985: 67 (list).
Cancer breweri Gabb, 1869: 1. --Cooper, 1887: 227. --Arnold, 1903: 345.
Cancer antennarius Stimpson, 1856. --Rathbun, 1926: 62, 63 (in part).

Kodiak Island (Alaska) to San Diego; probably not Bahia Magdalena (Baja California) (Garth and Abbott, 1980)

(Additional ecological information on species of Cancer is in MacKay, 1943, Ecology 24(1): 113-115)

FAMILY CORYSTIDAE
(No known species in California waters)

FAMILY PIRIMELIDAE
(No known species in California waters)

FAMILY THIIDAE
(No known species in California waters)

Section Brachyrhyncha

SUPERFAMILY PORTUNOIDEA

FAMILY GERYONIDAE
(No known species in California waters)

FAMILY PORTUNIDAE

Callinectes arcuatus Ordway, 1863
Garth and Stephenson, 1966: 43, pl. 5, fig. A; pl. 8, fig. A; pl. 10, fig. A; pl. 12, fig. D. --Williams, 1974: 752, Figs. 8, 18f, 20g-h, 22f, 24 (contains prior synonymy)

Los Angeles harbor, California, to Mollenda, Peru, including Gulf of California and Galapagos Islands (Williams, 1974; Garth and Abbott, 1980)

Callinectes bellicosus (Stimpson, 1862)
Garth and Stephenson, 1966: 47, pl. 5, fig. B; pl. 8, fig. B, pl. 10, fig. B; pl. 12, fig. B. --Williams, 1974: 761, Figs 10, 18h, 20j-k, 22h, 27 (contains prior synonymy)

Point Loma and San Diego, California, to Bahia Almejas (southeastern extension of Bahia Magdalena), Baja California, and

Gulf of California (Rathbun, 1895; Schmitt, 1921; Garth and Stephenson, 1966; Williams, 1974)

Euphylax dovii Stimpson, 1860
Stimpson, 1860: 226, pl. 13 [not 5], fig. 5, 5a. --A. Milne Edwards, 1879: 204, pl. 38, figs. 2-2d. --Rathbun, 1930: 147, pl. 65. --Austin, 1985: 648 (list)

At least one report from southern California, in the early 1970's, but I have not been successful in recalling the author/date of that publication. I believe it was off Catalina Island.

Portunus xantusii xantusii (Stimpson, 1860)
Santa Barbara to Topolobampo (Mexico) (Garth and Abbott, 1980)
Schmitt, 1921: 237.

SUPERFAMILY BYTHOGRAEOIDEA

FAMILY BYTHOGRAEIDAE
(No known species in California waters)

SUPERFAMILY XANTHOIDEA

FAMILY GONEPLACIDAE

Malacoplax californiensis (Lockington, 1877)
Mugu Lagoon (Ventura County) to Bahia Magdalena (Baja California) (Garth and Abbott, 1980)

FAMILY HEXAPODIDAE
(No known species in California waters)

FAMILY PLATYXANTHIDAE
(No known species in California waters)

FAMILY XANTHIDAE

Cycloxanthops novemdentatus (Lockington, 1877)
Rathbun, 1930: 292, pl. 134, fig. 1; pl. 135, figs. 2, 3 (contains prior synonymy, including C. rugosus of Holmes (1900) and Schmitt (1921: 240)
Charwat, 1975: 69 (fig.), 70.
GArth and Abbott, 1980:
Austin, 1985: 648 (list).

Monterey Bay to Punta Abreojos (Baja California), including offshore islands; conspicuous in intertidal zone at La Jolla (Garth and Abbott, 1980)

Eurypanopeus hyperconvexus Garth, 1986
Garth, 1986: 11, fig. 6A-F.
One-half to one mile NW of Anacapa Island light (Channel Islands), California. Known only from the type locality.

Heteractaea lunata (H. Milne Edwards and Lucas, 1843)
Charwat, 1975: 77 (fig.), 78.

Lophopanopeus bellus bellus (Stimpson, 1860)
see Rathbun for full synonymy. --Austin, 1985: 648 (list, as L. bellus). --Foster and Schiel, 1985: 67 (list), 69.

Resurrection Bay (Alaska) to Cayucos (San Luis Obispo County) (Garth and Abbott, 1980)

Lophopanopeus bellus diegensis Rathbun, 1930
see Rathbun for full synonymy. --Reish, 1972: 87, fig. 284 (as L. diegensis). --Charwat, 1975: 71 (fig.), 72 (as L. bellus). --Garth and Abbott, 1980:)

Monterey Bay to San Diego (Garth and Abbott, 1980)

Lophopanopeus frontalis (Rathbun, 1893)
see Rathbun for full synonymy, including former L. lockingtoni:

Lophopanopeus lockingtoni Rathbun, 1900
Rathbun, 1900: 137. --Rathbun, 1904: 183, pl. 7, fig. 7. -- Schmitt, 1921: 244, pl. 37, fig. 2. --Rathbun, 1930: 325, pl. 153, figs. 1, 2, 8; pl. 154, figs. 1-3.

Santa Monica Bay (Los Angeles County) to Bahia Magdalena (Baja California), including Gulf of California (Garth and Abbott, 1980)
Charwat, 1975: 73 (fig.), 74.

Lophopanopeus leucomanus heathi Rathbun
see Rathbun for full synonymy
Moss Beach (San Mateo County) to La Jolla (San Diego County) (Garth and Abbott, 1980) Charwat, 1975: 75 (fig.), 76 (as L. leucomanus (Lockington))

Lophopanopeus leucomanus leucomanus (Lockington, 1877)
see Rathbun for full synonymy

Carmel (Monterey County) to beach at Rosarito (Baja California) (Garth and Abbott, 1980) Charwat, 1975: 75 (fig.), 76 (as L. leucomanus) [which subspecies did Charwat figure?]

Micropanope areolata Rathbun, 1898
Rathbun, 1930: 450, pl. 182, figs. 1, 2.
Southern California (6 mi N of Santa Monica, Los Angeles County) (Rathbun, 1930)

Is this synonymous with Gonopanope areolata (Rathbun, 1898)? The name and date certainly suggest that, although Williams et al. (1989) treat them (list them) separately, giving one a common name, but not the other. Probably a result of Guinot's work.

Micropanope latimanus Stimpson, 1871
Rathbun, 1937: 433 (no figures)

San Diego, California, to Cabo San Lucas, Baja California (Rathbun, 1930)

Paranxanthias taylori (Stimpson, 1860)
Monterey Bay to Bahia Magdalena (Baja California) (Garth and Abbott, 1980) Charwat, 1975: 79 (fig.), 80.

Pilumnus spinohirsutus (Lockington, 1877)
San Pedro (Los Angeles County) to Bahia Magdalena (Baja California) (Garth and Abbott, 1980) Charwat, 1975: 81 (fig.), 82.

Rhithropanopeus harrisii (Gould, 1841)
South of Coos Bay, Oregon; San Francisco Bay and Delta areas, as far upriver as Stockton (San Joaquin County); Atlantic coast from New Brunswick (Canada) to Tampico (Mexico); Europe (Garth and Abbott, 1980). Introduced species; first west coast record (San Francisco Bay) reported in 1940 (Jones, 1940; see Garth and Abbott, 1980).

SUPERFAMILY BELLIOIDEA

FAMILY BELLIIDAE
(No known species in California waters)

SUPERFAMILY GRAPSIDOIDEA

FAMILY GECARCINIDAE
(No known species in California waters)

FAMILY GRAPSIDAE

Grapsodius eximius Holmes, 1900
Rathbun, 1918: 259. --Schmitt, 1921: 276.

Known only from Holmes' description of the single male from San Diego, California (Rathbun, 1918)

Hemigrapsus nudus (Dana, 1851)
Yakobi Island (Alaska) to Bahia de Tortuga (Baja California); uncommon in southern California and southward (Garth and Abbott, 1980)

Hemigrapsus oregonensis (Dana, 1851)
Resurrection Bay (Alaska) to Bahia de Todos (Baja California; not Gulf of California (specimens previously reported from there are referrable to Goetice americanus Rathbun) (Garth and Abbott, 1980)

Pachygrapsus crassipes Randall, 1839
Charleston (Oregon) to Isla de Santa Margarita (Baja California) and Gulf of California (Garth and Abbott, 1980: 619)

Planes cyaneus Dana, 1852

Rathbun, 1918, treats this as a junior synonym of P. minutus. However, Williams et al. (1989) treat it (or at least list it) separately. Not mentioned by Schmitt, 1921.

Planes minutus (Linnaeus, 1758)
Schmitt, 1921: 272, pl. 46.

Pelagic (on floating seaweed and algae), west of Humboldt Bay, off Santa Catalina Island; off San Pedro, Los Angeles County; off Point Loma; off San Diego (Rathbun, 1918; Schmitt, 1921).

FAMILY MICTYRIDAE
(No known species in California waters)

SUPERFAMILY PINNOTHEROIDEA

FAMILY PINNOTHERIDAE

Fabia canfieldi Rathbun, 1918
Rathbun, 1918: 106, fig. 57.

Monterey, California; known only from the type locality (Rathbun, 1918)

Fabia concharum (Rathbun, 1893)
San Pedro (Los Angeles County) to Bahia de Tortuga (Baja California) (Garth and Abbott, 1980)

Fabia subquadrata Dana, 1851
Akutan Pass (Aleutian Islands, Alaska) to La Jolla (San Diego County); uncommon south of San Pedro (Los Angeles County) (Garth and Abbott, 1980)

Opisthopus transversus Rathbun, 1893
Monterey to Laguna San Ignacio (Baja California); San Felipe Baja California) (Garth and Abbott, 1980)

Parapinnixa affinis Holmes, 1900
San Pedro (Los Angeles County); Anaheim Landing and Newport Beach (Orange County); San Diego; also Sakhalin and Kurile Islands (Russia) (Garth and Abbott, 1980)

Pinnixa barnharti Rathbun, 1918
Puget Sound, Washington (Lie, 1968) to Isla de Ixtapa, Zihuatanejo, Guerrero, Mexico (Caso, 1965) (Garth and Abbott, 1980: 614, fig. 25.34; Ricketts et al., 1985: 338; Zmarzly, 1992: 679, figs. 2, 3)

Pinnixa faba (Dana, 1851)
Dana, 1851. Garth and Abbott, 1980: 615, fig. 25.35; Hart, 1982: 234, fig. 97 and color plate; Rudy and Rudy, 1983: 143-144;

Ricketts et al., 1985: 377), (Zmarzly, 1992: 682, figs. 4, 5) Schmitt et al., 1973. Pearce, 1965. Zullo and Chivers, 1969.

Prince of Wales Island (Alaska) to Newport Bay (Orange County) (Garth and Abbott, 1980), south to Camalu Point, Baja California (Zmarzly, 1992)

Pinnixa forficulimanus Zmarzly, 1992
Zmarzly, 1992: 685, fig. 6. Santa Cruz to San Diego, California (Zmarzly, 1992)

Pinnixa franciscana Rathbun, 1918
Rathbun, 1918. Dales, 1957. Garth and Abbott, 1980: 495, 579-580, 617, fig. 25.38; Ricketts et al., 1985: 307, 385, fig. 238; Zmarzly, 1992: 687, fig. 7)

San Francisco Bay to Bahia de Tortugas (Baja California) (Zmarzly, 1992)

Pinnixa hiatus Rathbun, 1918
Rathbun, 1918.
Southern California Bight (Goleta to San Diego, California)
Zmarzly, 1992: 690, fig. 8

Pinnixa littoralis Holmes, 1894
Sitka, Alaska, to Bahia Santa Maria (10 km south of San Quintin), Baja California (Schmitt, 1921; Garth and Abbott, 1980: 616, fig. 25.36a, b; Hart, 1982: 236, fig. 98 and color plate; Ricketts et al., 1985: 334, 377; Campos-Gonzalez, 1986: 238; Zmarzly, 1992: 693, fig. 9) Rathbun, 1918. Schmitt, 1921.

Pinnixa longipes (Lockington, 1877)
Lockington, 1877. Holmes, 1894. Rathbun, 1918. Schmitt, 1921. Bousquette, 1980 (larval development); Garth and Abbott, 1980: 616, fig. 25.37; Ricketts et al., 1985: 349, 369-370, fig. 288. Carlisle, 1969.

Bodega Bay harbor (Sonoma County) to Ensenada (Baja California); one erroneous report from east coast of North America (Garth and Abbott, 1980; Zmarzly, 1992: 695, fig. 10)

Pinnixa minuscula Zmarzly, 1992
Zmarzly, 1992: 697, fig. 11. Goleta to San Diego, California (Zmarzly, 1992)

Pinnixa occidentalis Rathbun, 1893
Hart, 1982: 242, fig. 101; Roesijadi, 1978: 259 (larval physiology). Wicksten 1980: 360 (table, distribution) Zmarzly, 1992: 700, fig. 12. See also Glassell, 1934; Lie, 1968.

Alaska to Bahia Magdalena, Baja California, Mexico (Hart, 1982; Zmarzly, 1992)

Pinnixa schmitti Rathbun, 1918
Hart, 1982: 244, fig. 102; Ricketts et al., 1985: 307, 385, 387; Zmarzly, 1992: 702, figs. 13, 14. See also Wells, 1928; Dales, 1957; Lie, 1968 (as cited in Zmarzly, 1992)

Unalaska, Alaska to San Francisco Bay (Schmitt et al., 1973; Garth and Abbott, 1980) and San Diego (Zmarzly, 1992) Wicksten, 1980: 360 (table, distribution)

Pinnixa tomentosa Lockington, 1876
Lockington, 1876. Holmes, 1894. Scanland and Hopkins, 1978; Garth and Abbott, 1980: 617; Zmarzly, 1992: 706, fig. 15.

San Clemente Island (Channel Islands); Mission Bay (San Diego County), San Felipe and Bahia de Los Angeles (Baja California) (Garth and Abbott, 1980) Monterey, California to Cabo San Lucas, Baja California, and Gulf of California (Scanland and Hopkins, 1978; Zmarzly, 1992). Bay

Pinnixa tubicola Holmes, 1894
Holmes, 1894. Scanland and Hopkins, 1978; Garth and Abbott, 1980: 617-618, fig. 25.39; Hart, 1982: 238, fig. 99 and color plate; Ricketts et al., 1985: 82, 307; Zmarzly, 1992: 709, fig. 16. See also Wells, 1928, for host record.

Alaska (no specific locality given); Prince Rupert (British Columbia) to San Diego (Garth and Abbott, 1980); south to Bahia Blanca, Baja California (Zmarzly, 1992)

Pinnixa weymouthi Rathbun, 1918
Weymouth, 1910: fig. 7. Rathbun, 1918. Garth and Abbott, 1980: 618, fig. 25.40. Zmarzly, 1992: 710, fig. 17.

Monterey Bay and Peninsula (pacific Grove) (Garth and Abbott, 1980; Zmarzly, 1992)

Pinnotheres nudus Holmes, 1894
Rathbun, 1918: 83, fig. 40a-e. --Schmitt, 1921: 252, fig. 149a-e (after Holmes, from Rathbun)

Santa Cruz, California, and Monterey (Holmes, 1894; Rathbun, 1918; Schmitt, 1921)

Pinnotheres holmesi Rathbun, 1918
Rathbun, 1918: 68, fig. 32; pl. 15, figs. 1, 2. --Schmitt, 1921: 39, figs. 7, 8.

Known only from a single female, probably from Pacific Grove (Schmitt, 1921).

Pinnotheres pugettensis Holmes
Departure Bay (British Columbia) to Monterey Bay (Garth and Abbott, 1980)

Scleroplax granulata Rathbun, 1893
Roller Bay (Hope Island, off northern Vancouver Island, British Columbia) to Ensenada (Baja California) (Garth and Abbott, 1980)

SUPERFAMILY POTAMOIDEA
(8 Families of Freshwater crabs, none known from North America)

SUPERFAMILY OCYPODOIDEA

FAMILY OCYPODIDAE

Uca crenulata crenulata (Lockington, 1877)
Playa del Rey (Los Angeles County) (small colony) to Isla de los Mangles (Baja California); formerly large colonies at Newport Bay (Orange County) and Mission Bay (San Diego County), facing extinction as of 1980 (Garth and Abbott, 1980)

Uca musica Rathbun, 1914
Rathbun, 1914: 417, fig. 5; pl. 10. --Rathbun, 1918: 417, pl. 154. --Schmitt, 1921: 280, pl. 50, fig. 165 (after Rathbun).

Vancouver, British Columbia, and Seattle Washington, to Guaymas, Mexico (Rathbun, 1918; Schmitt, 1921). Curiously, Rathbun (1918) gives as the range "From San Diego, California, to Mazatlan, Mexico; occasionally further north" but includes two extreme northern records, Vancouver and Seattle (both records in the form of photographs sent to her by collectors). to her from Vancou

FAMILY PALICIDAE
(No known species in California waters)

FAMILY RETROPLUMIDAE
(No known species in California waters)

SUPERFAMILY CRYPTOCHIROIDEA

FAMILY CRYPTOCHIRIDAE (formerly Haplocarcinidae)
(No known species in California waters)